

SIM JPM A

Developed By: _____ **Date:** _____
Instructor/Developer

Concurred By: _____ **Date:** _____
Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____
Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Operation With High Switchyard VoltageJPM No.: 2016 Systems - Control Room JPM A (Alternate Path)

K/A Reference: 062 A2.08 (2.7/3.0)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

- Initial Conditions:
- Plant is at 100% power.
 - Due to abnormal conditions on the Grid, 480V Bus E-2 currently exceeds 505 Volts.
 - AOP-031, Operation with High Switchyard Voltage, has been completed up to step 21.
 - You are the BOP.
 - "D" IAC is in service with "A" and "B" IACs in AUTO.
 - The DSDG is secured and aligned for AUTO.
 - The Load on Emergency Bus E-1 has NOT been altered since entering this AOP.

Initiating Cue: The CRS has directed you to continue with AOP-031 until 480V Bus E-2 voltage is restored to less than 505 Volts.

Job Performance Measure Worksheet

Task Standard: The operator will transfer 4KV Bus 4 & 5 from the UAT to the SUT (via 4KV Bus 3) in an effort to lower Switchyard Voltage; and when Breaker 50/20 fails to automatically OPEN, the operator will manually open it per AOP-31. Ultimately, the voltage on 480V Bus E-2 will be lowered to less than 502 volts.

Required Materials: None

General References: AOP-31 (Operation with High Switchyard Voltage), Rev 15
OMM-22 (Emergency Operating Procedures User's Guide), Rev 45

Handouts: Handout 1: Control Room Copy of AOP-31 marked up for this JPM to Step 21.

Time Critical Task: NO

Validation Time: 11 minutes

<u>Critical Step Justification</u>	
Step 21	This step is critical because inserting the synchroscope key into 4 KV TIES Synchroscope Key Switch is necessary to transfer 4KV Bus 4 & 5 from the UAT to the SUT (via 4KV Bus 3).
Step 22	This step is critical because placing the Synchroscope Switch to the BUS 3 & 4 position is necessary to transfer 4KV Bus 4 & 5 from the UAT to the SUT (via 4KV Bus 3).
Step 24	This step is critical because momentarily placing the Control Switch for 4KV BUS 3-4 TIE, BKR 52/19 to the CLOSE position is necessary to transfer 4KV Bus 4 & 5 from the UAT to the SUT (via 4KV Bus 3).
<u>Alternate Path Critical Step Justification</u>	
Step 27	This step is critical because depressing the THINK pushbutton and placing the control switch for BKR 52/20 to the OPEN (TRIP) position is necessary to manually open Breaker 50/20.

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Construct Scenario File 006_JPM_ A as follows:
 - ICO V4160B4BRK20 f:TRIP_FAIL, (Breaker 52/20 Fails to Auto OPEN)
 - IMF EPS09 f:239.25, (Overvoltage on Bus E-2; > 506 Volts, due to High Switchyard Voltage)
 - (Conditional) \$006_52_20_TRIP DCO V4160B4BRK20 (Remove Breaker 52/20 failure on Control Switch to TRIP)
2. Reset simulator to IC-5, 100% Power.
3. Place in RUN and allow time to stabilize.
4. Execute Scenario File 006_JPM_ A
5. Ensure that the following components are aligned:
 - C Charging Pump is RUNNING
 - HVH-3 and HVH-4 are RUNNING
 - HVA-1B is RUNNING
 - HVH-5B is OFF
 - HVE-2B is OFF
6. Call up QP E1E2 at the BOP Desk.
7. Perform the actions of AOP-31 up to Step 21.
8. Stabilize the plant.
9. Freeze the Simulator.

OR

1. Reset Simulator to Temporary Snap IC-600 (July, 2015).
2. Perform Attachment 2 (Simulator Setup For Exams) of TAP-411.
3. Call up QP E1E2 at the BOP Desk.
4. Place Simulator in Run when Operator assumes the watch.

PERFORMANCE INFORMATION

(Critical Steps are identified as such in right-hand column)

Provide operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

START TIME: _____

<p><u>STEP 1:</u> Check Emergency Bus E-2 Voltage – Greater than 505 Volts (Step 21).</p> <p><u>STANDARD:</u> The operator observes ERFIS (QP E1E2) and recognizes that Bus E-2 Voltage is approximately 506.5 volts.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>NOTE:</u> Transferring the following safety related components will cause voltage to rise. This step is designed to protect components.</p>	
<p><u>STEP 2:</u> Check Instrument Air as follows:</p> <p>a. Check Instrument Air Compressor B – Running in Manual (Step 22.a.) RNO: Go to Step 23</p> <p><u>STANDARD:</u> The operator reads the Note, and proceeds. The operator recognizes that Instrument Air Compressor B is in AUTO as stated in the Initial Cue. The operator addresses the RNO.</p> <p>EXAMINER'S CUE: If the operator requests status of IAC B, remind the operator that the Cue sheet stated that IACs "A" and "B" were in AUTO.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: If the operator contacts the AO, as the AO, report that IAC A and B are in AUTO.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

NOTE: For conditions where it may not be possible to reduce emergency bus voltages below 505 volts AND running of the EDG is required to ensure that the EDG is operable, testing of the EDG may be performed with concurrence from the system engineer if the system engineer determines that such testing does not constitute a long term degradation risk.

STEP 3: Check EDG "B" Status as Follows:
a. Check Main Generator – ON LINE
(Step 23.a.)

STANDARD: The operator reads the Note, and proceeds.
The operator observes the 52/8 and 52/9 Red status lights are LIT and Green status lights are OFF (or equivalent), and concludes that the Main Generator is ON Line.

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

___ SAT

___ UNSAT

STEP 4: Check EDG "B" Status as Follows:
b. Check EMERGENCY DIESEL GENERATOR B - RUNNING
(Step 23.b.)

STANDARD: The operator observes the B EDG Green OFF status light is LIT and concludes that the B EDG is NOT running.

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

<p><u>STEP 5:</u> Check EDG "B" Status as Follows: b. RNO: Postpone EDG "B" testing while in the AOP. Go to Step 24. Check EMERGENCY DIESEL GENERATOR B - RUNNING (Step 23.b. RNO)</p> <p><u>STANDARD:</u> The operator proceeds to Step 24.</p> <p>EXAMINER'S CUE: If the operator informs the CRS to postpone EMERGENCY DIESEL GENERATOR B testing while in this procedure, acknowledge as the CRS.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: If the operator contacts the System Engineer to postpone EMERGENCY DIESEL GENERATOR B testing while in this procedure, acknowledge as the System Engineer.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u> Log the Time That Any of the Following Equipment Is OR Was Running Above 505 Volts.</p> <ul style="list-style-type: none"> • INSTRUMENT AIR COMPRESSOR B • EDG B PRE-LUBE OIL PUMP • Fuel Oil Transfer Pump B (Step 24) <p><u>STANDARD:</u> The operator recognizes that NONE of these components are running.</p> <p>EXAMINER'S CUE: Inform operator that another operator will track the run times.</p> <p>EXAMINER'S NOTE: The B IAC is in AUTO and the B EDG is NOT RUNNING.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 7:</u> Check Load On Emergency Bus E-1 – HAS BEEN RAISED USING STEP 18. (Step 25) Go to Step 27 (Step 25 RNO)</p> <p><u>STANDARD:</u> The operator recognizes that load on Emergency Bus E-1 has NOT been raised based on information given in the Initial Cue.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: This would have been completed in Step 18 of AOP-031, which was bypassed.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u> Raise Load On Emergency BUS E-2 As Follows: a. Check Charging Pump C - Running (Step 27.a)</p> <p><u>STANDARD:</u> The operator observes the C Charging Pump Red status light is LIT and the Green status light is OFF (Or equivalent) and concludes that Charging Pump C is running.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 9:</u> Raise Load On Emergency BUS E-2 As Follows:</p> <p> b. Verify CV RECIRC FANS – RUNNING</p> <p> - HVH-3</p> <p> - HVH-4</p> <p> (Step 27.b)</p> <p><u>STANDARD:</u> The operator observes the HVH-3 Red ON status light is LIT and concludes that HVH-3 is running.</p> <p> The operator observes the HVH-4 Red ON status light is LIT and concludes that HVH-4 is running.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u> Check CONT RM AIR HANDLING HVA-1B - RUNNING</p> <p> (Step 27.c)</p> <p><u>STANDARD:</u> The operator observes the HVA-1 Red ON status light is LIT and concludes that HVH-3 is running.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 11:</u> Check CRDM COOLING FAN, HVH-5B – RUNNING (Step 27.d)</p> <p><u>STANDARD:</u> The operator the HVH-5B observes the Green OFF status light is LIT and concludes that HVH-5B is NOT RUNNING, and proceeds to the RNO.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 12:</u> Transfer CRDM COOLING FANS as follows:</p> <ol style="list-style-type: none"> 1. Start HVH-5B 2. Stop HVH-5A (Step 27.d RNO) <p><u>STANDARD:</u> The operator places the HVH-5B control switch to START and observes the Red status light is LIT and the Green status light is OFF.</p> <p>The operator places the HVH-5A control switch to STOP and observes the Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: E-2 Voltage should lower to approx. 506.3 Volts.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 13:</u> Check AUX BLDG EXH FAN, HVE-2B - RUNNING (Step 27.e)</p> <p><u>STANDARD:</u> The operator observes the HVE-2B Green OFF status light is LIT and concludes that HVE-2B is NOT running, and proceeds to the RNO.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 14:</u> Transfer AUX BLDG EXH FANS as follows: 1) Start HVE-2B 2) Stop HVE-2A (Step 27.e RNO)</p> <p><u>STANDARD:</u> The operator places the HVE-2B control switch to START and observes the Red status light is LIT and the Green status light is OFF.</p> <p>The operator places the HVE-2A control switch to STOP and observes the Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: E-2 Voltage should lower to approx. 506.2 Volts.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 15:</u> Check RHR – IN SERVICE. (Step 27. f)</p> <p><u>STANDARD:</u> The operator recognizes that the plant is in Mode 1 and determines that RHR is NOT is IN SERVICE. The operator addresses the RNO and proceeds to Step 28.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 16:</u> Check Emergency BUS E-2 Voltage – GREATER THAN 505 VOLTS (Step 28)</p> <p><u>STANDARD:</u> The operator observes Bus E-2 Voltage on ERFIS to be greater than 505 Volts (506.2 volts).</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 17:</u> Check DSDG Status As Follows: a. Check Main Generator – ON LINE (Step 29.a)</p> <p><u>STANDARD:</u> The operator observes the 52/8 and 52/9 Red status lights are LIT and Green status lights are OFF (or equivalent), and concludes that the Main Generator is ON Line.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 18:</u> Check DSDG Status As Follows: b. Check DSDG - RUNNING (Step 29.b)</p> <p><u>STANDARD:</u> The operator recognizes that DSDG is secured and aligned for AUTO as stated in the Initial Cue. The operator addresses the RNO.</p> <p>EXAMINER'S CUE: If the operator requests status of the DSDG, remind the operator that the Cue sheet stated that the DSDG was secured and aligned for AUTO.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: If the operator contacts the AO, as the AO, report that the DSDG is secured and aligned for AUTO.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 19:</u> Check DSDG Status As Follows: b. RNO: Postpone DSDG testing while in this AOP. Go to Step 30. (Step 29.b RNO)</p> <p><u>STANDARD:</u> The operator proceeds to step 30.</p> <p>EXAMINER'S CUE: If operator informs the CRS to postpone DSDG testing while in this procedure, acknowledge as the CRS.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: If the operator contacts the System Engineer to postpone DSDG testing while in this procedure, acknowledge as the System Engineer.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 20:</u> Check 4KV BUS 3-4 TIE, BKR 52-19 - OPEN (Step 30)</p> <p><u>STANDARD:</u> The operator observes 4KV BUS 3-4 TIE, BKR 52-19 Green status light is LIT and Red status light is OFF, and determines that BKR 52-19 IS OPEN.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: BKR 52-19 indicates OPEN (TRIP) by GREEN light lit.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 21:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows:</p> <p>a. Insert the Synchroscope Key into 4 KV TIES Synchroscope Key Switch (Step 31.a)</p> <p><u>STANDARD:</u> The operator inserts the synchroscope key into 4 KV TIES Synchroscope Key Switch.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 22:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows:</p> <p>b. Place the Synchroscope Switch to the BUS 3 & 4 position (Step 31.b)</p> <p><u>STANDARD:</u> The operator rotates the Synchroscope Switch clockwise to the BUS 3 & 4 position.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 23:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: c. Verify the Synchroscope comes to approximately the 12 o'clock position. (Step 31.c)</p> <p><u>STANDARD:</u> The operator observes that the Synchroscope is pointing to the 12 o'clock position.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 24:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: d. Momentarily place the Control Switch for 4KV BUS 3-4 TIE, BKR 52/19 to the CLOSE position. (Step 31.d)</p> <p><u>STANDARD:</u> The operator momentarily places the control switch for BKR 52/19 to the CLOSE position.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 25:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: e. Check BKR 52/19 - CLOSED (Step 31.e)</p> <p><u>STANDARD:</u> The operator observes that the BKR 52/19 Red status light is LIT and the Green status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: BKR 52-19 indicates CLOSED with RED light lit.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 26:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows: f. Check UNIT AUX TO 4 KV BUS 4 BKR, 52/20 - OPEN (Step 31.f)</p> <p><u>STANDARD:</u> The operator observes that the BKR 52/20 Red status light has remained LIT and the Green status light has remained OFF; and concludes that BKR 52/20 has remained in the CLOSED position (Alternate Path). The operator will address the RNO.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: BKR 52/20 indicates CLOSED with RED light lit. BKR 52/20 should have automatically opened when BKR 52/19 was CLOSED (A failure has prevented it from doing so).</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 27:</u> Transfer 4160V BUS 4 to the STARTUP TRANSFORMER as follows:</p> <p>f. RNO: Perform the following</p> <ul style="list-style-type: none">• Simultaneously depress the THINK pushbutton AND place the control switch for BKR 52/20 to the OPEN position. <p>(Step 31.f RNO)</p> <p><u>STANDARD:</u> The operator simultaneously depresses the THINK pushbutton and places the control switch for BKR 52/20 to the OPEN (TRIP) position, and observes that the Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: BKR 52/20 indicates OPEN (TRIP) with GREEN light lit. When this occurs Bus E-2 voltage will drop to 484.8 volts.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 28:</u> Place the 4 KV TIES Synchroscope Key Switch to the mid position. (Step 31.g)</p> <p><u>STANDARD:</u> The operator rotates the Synchroscope Switch counter-clockwise to the mid position.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 29:</u> Check the following:</p> <ul style="list-style-type: none"> • Emergency BUS E-1 Voltage - LESS THAN 505 VOLTS <u>AND</u> • Emergency BUS E-2 Voltage - LESS THAN 505 VOLTS (Step 32) <p><u>STANDARD:</u> The operator observes that Bus E-1 voltage is 488.9 volts. The operator observes that Bus E-2 voltage is 484.8 volts.</p> <p>EXAMINER'S CUE: When operator identifies that BOTH Bus E-1 and E-2 are less than 505 VOLTS inform the operator that this completes the JPM.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 30:</u> Check Voltage as Follows: (Continuous Action Step)</p> <ul style="list-style-type: none"> • APP-036-E3, SUT PRI OVER/UNDER VOLTAGE – EXTINGUISHED <u>AND</u> • WEST 115KV BUS VOLTAGE – LESS THAN 119 KV <u>AND</u> • Emergency BUS E-1 Voltage – LESS THAN 502 VOLTS <u>AND</u> • Emergency BUS E-2 Voltage – LESS THAN 502 VOLTS (Step 33) <p><u>STANDARD:</u> The operator observes that APP-036-E3 is DARK.</p> <p>The operator observes that WEST 115KV BUS VOLTAGE is 18.8 KV.</p> <p>The operator observes that Bus E-1 voltage is 488.9 volts.</p> <p>The operator observes that Bus E-2 voltage is 484.8 volts.</p> <p>EXAMINER'S CUE: When operator identifies that BOTH Bus E-1 and E-2 are less than 502 VOLTS inform the operator that this completes the JPM.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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Terminating Cue:

Evaluation on this JPM is complete.

STOP TIME:

Job Performance Measure No.: 2016 Systems - Control Room JPM A

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- Plant is at 100% power.
- Due to abnormal conditions on the Grid, 480V Bus E-2 currently exceeds 505 Volts.
- AOP-031, Operation with High Switchyard Voltage, has been completed up to step 21.
- You are the BOP.
- "D" IAC is in service with "A" and "B" IACs in AUTO.
- The DSDG is secured and aligned for AUTO.
- The Load on Emergency Bus E-1 has NOT been altered since entering this AOP.

INITIATING CUE:

The CRS has directed you to continue with AOP-031 until 480V Bus E-2 voltage is restored to less than 505 Volts.

SIM JPM B

Developed By: _____ **Date:** _____
Instructor/Developer

Concurred By: _____ **Date:** _____
Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____
Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: High Vibration on Main TurbineJPM No.: 2016 Systems - Control Room JPM B (Alternate Path)

K/A Reference: 045 A4.1 (3.1/2.9)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide operator with Initial Conditions/Cue (Last Page of this JPM).

Initial Conditions: The plant is stabilized at 37% power.

Initiating Cue: Monitor the plant and respond as required.

Task Standard: The operator will recognize that the Main Turbine must be tripped and attempt to manually trip the Main Turbine; and then manually runback the Main Turbine until the Turbine Governor Valves are closed, all the while the reactor remains critical.

Required Materials: None

General References: APP-008 (SW, CW and Turb Gen Aux), Rev 67
AOP-006 (Turbine Eccentricity/Vibration), Rev 21
AOP-007 (Turbine Trip Below P-8), Rev 16
OMM-22 (Emergency Operating Procedures User's Guide), Rev 45

Handouts: Handout 1: Blank copy of AOP-006.

2016 Systems - Control Room JPM B

NUREG 1021, Revision 10

Job Performance Measure Worksheet

Handout 2: Blank copy of AOP-007.

Time Critical Task: NO

Validation Time: 7 minutes

<u>Critical Step Justification</u>	
Step 8	This step is critical because simultaneously depressing the THINK and TURBINE TRIP push buttons is necessary to attempt to manually trip the Main Turbine.
<u>Alternate Path Critical Step Justification</u>	
Step 10	This step is critical because depressing the TURB MANUAL pushbutton and the GV DOWN pushbutton is necessary to manually runback the Main Turbine until the Turbine Governor Valves are closed.

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Construct Scenario File 006_JPM_B as follows:
 - IOR diRPSDDI023TT f:AS-IS (Turbine Pushbutton Fails to Trip the Turbine)
 - IMF TUR04E, delay:0; ramp:0:15; i: ASIS; f:60 (High Main Turbine Vibration > 14 mils) on Event # 1.
2. Reset simulator to IC-9, ≈37% Power.
3. Place in RUN, execute Scenario File 006_JPM_B, and allow time to stabilize.
4. Freeze the Simulator.

OR

1. Reset Simulator to Temporary Snap IC-601 (July, 2015).
2. Open Scenario File 006_JPM_B.

NOTE: **Booth Instructor will need to operate Event 1 immediately after the operator takes the watch.**

3. Perform Attachment 2 (Simulator Setup For Exams) of TAP-411.
4. Place Simulator in Run when Operator assumes the watch.

(Critical Steps are identified as such in right-hand column)

Provide operator with Initial Conditions/Cue (Last Page of this JPM).

START TIME: _____

BOOTH OPERATOR: Operate Event 1 within 5 seconds of applicant taking the watch.

STEP 1: Observe APP-008-A8, TURBINE SUPERVISORY INSTRUMENT, alarm.

___ SAT

STANDARD: The operator The operator addresses APP-008-A8.

EXAMINER'S CUE: NONE

___ UNSAT

EXAMINER'S NOTE: The operator may call up GD TURBBLAD on ERFIS.

BOOTH OPERATOR CUE: NONE

COMMENTS:

STEP 2: IF caused by High Rotor Eccentricity, THEN REFER TO AOP-006. (APP-008 A8, Step 1)

___ SAT

STANDARD: The operator determines that alarm is due to high vibration on main Turbine, and proceeds.

EXAMINER'S CUE: NONE

___ UNSAT

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

PERFORMANCE INFORMATION

<p><u>STEP 3:</u> IF caused by Rotor Position OR Differential Expansion, THEN STOP raising Turbine Load OR slow cylinder heating rate. (APP-008 A8, Step 2)</p> <p><u>STANDARD:</u> The operator determines that alarm is due to high vibration on main Turbine, and proceeds.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> IF caused by High Vibration, THEN:</p> <ol style="list-style-type: none"> 1) IF bearing metal temperature is greater than or equal to 225°F for bearings TBFF (Thrust Bearing Front Face), TBRF (Thrust Bearing Rear Face), or bearings 7, 8 or 9 THEN REFER TO AOP-006. 2) IF bearing metal temperature is greater than or equal to 250°F on bearings 1, 2, 3, 4, 5, or 6 THEN REFER TO AOP-006. 3) REFER TO AOP-006. <p>(APP-008 A8, Step 3)</p> <p><u>STANDARD:</u> The operator determines that alarm is due to high vibration on main Turbine, and addresses AOP-006.</p> <p>EXAMINER'S CUE: When the operator locates AOP-006, provide Handout 1.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 5:</u> NOTIFY Plant Personnel Of Procedure Entry Using Plant Page System (AOP-006 Step 1)</p> <p><u>STANDARD:</u> The operator makes an announcement indicating entry into AOP-006 Turbine Eccentricity Vibration.</p> <p>EXAMINER'S CUE: IF asked, the SM has made the announcement.</p> <p>EXAMINER'S NOTE: The operator may ask the SM to make the announcement.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u> CHECK Turbine Speed - LESS THAN OR EQUAL TO 600 RPM (AOP-006 Step 2) OBSERVE NOTE prior to Step 5 AND GO TO Step 5. (AOP-006 Step 2 RNO)</p> <p><u>STANDARD:</u> The operator observes that Turbine Speed is 1800 RPM, and proceeds to RNO, THEN proceeds to Note prior to Step 5.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>NOTE: ERFIS plot GD TURBINE contains turbine bearing metal temperatures.</p>	

PERFORMANCE INFORMATION

<p><u>STEP 7:</u> CHECK Conditions Allow Continued Turbine Operation: Bearing vibration levels on TURBINE GENERATOR SUPERVISORY RECORDER - LESS THAN 14.0 MILS AND Bearings TBFF, TBRF, 7, 8 and 9 - LESS THAN 225°F AND Bearings 1 through 6 - LESS THAN 250°F (AOP-006 Step 5)</p> <p><u>STANDARD:</u> The operator reads the Note, and proceeds.</p> <p>The operator observes that Turbine vibration is > 14 Mils, and proceeds to RNO.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The operator may call up GD TURBINE on ERFIS.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 8:</u> PERFORM one of the following:</p> <p>IF REACTOR TRIP BLOCK P-8 permissive light is extinguished, THEN TRIP the reactor AND GO TO EOP-E-0, Reactor Trip Or Safety Injection. OR IF REACTOR TRIP BLOCK P-8 permissive light is illuminated, THEN PERFORM the following: TRIP the turbine by simultaneously depressing THINK and TURBINE TRIP push buttons. GO TO AOP-007, Turbine Trip Below P-8. (AOP-006 Step 5)</p> <p><u>STANDARD:</u> The operator observes that the REACTOR TRIP BLOCK P-8 permissive light is LIT.</p> <p>The operator simultaneously depresses THINK and TURBINE TRIP push buttons, and observes the GLU, GLL, GRU, and GRL CLOSED Green status lights are OFF (Governor Valves are still OPEN), and the SL OPEN and SR OPEN Red status lights are LIT (Stop Valves are still OPEN).</p> <p>The operator proceeds to AOP-007.</p> <p>EXAMINER'S CUE: When the operator locates AOP-007, provide Handout 2.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 9:</u> CHECK Turbine Trip: BOTH turbine stop valves - CLOSED OR ALL governor valves - CLOSED (AOP-007 Step 1)</p> <p><u>STANDARD:</u> The operator determines that that both Turbine Stop Valves and all Turbine Governor valves are OPEN and proceeds to the Step 1 RNO (Alternate Path).</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 10:</u> PERFORM the following:</p> <p>Manually TRIP the turbine by simultaneously depressing the THINK and TURBINE TRIP pushbuttons.</p> <p>IF turbine will NOT trip, THEN RUNBACK turbine at maximum rate until Governor Valves are closed. (AOP-007 Step 1 RNO)</p> <p><u>STANDARD:</u> The operator simultaneously depresses THINK and TURBINE TRIP push buttons, and observes the GLU, GLL, GRU, and GRL CLOSED Green status lights are OFF (Governor Valves are still OPEN), and the SL OPEN and SR OPEN Red status lights are LIT (Stop Valves are still OPEN).</p> <p>The operator depresses the TURB MANUAL pushbutton and observe that the TURB MANUAL Red status light, the GV FAST White status light and the GV DOWN Red status light are LIT.</p> <p>The operator depresses and holds the GV DOWN pushbutton until the GLU, GLL, GRU, and GRL CLOSED Green status lights are LIT and the Red status lights are OFF, and releases.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: It is expected that the Steam Dump System will operate and the Control Rods will be driven inward in AUTO while this is occurring.</p> <p>The operator may conclude that the attempt to manually trip the Turbine has already been made, and failed in AOP-006, and move directly to runback the Turbine without attempting to trip the Turbine a 2nd time. If this attempt is not made, and the operator runs back the Turbine Governor valves, the critical nature of this Step is still satisfied.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 11:</u> CHECK MSR PURGE And SHUTOFF VALVES - CLOSED (AOP-007 Step 2)</p> <p><u>STANDARD:</u> The operator places the Purge Valve Control Switch to CLOSE and observes the 1-6-1A, 2A, 1B, and 2B Green status light is LIT, and the Red status light is OFF.</p> <p>The operator places the Shutoff Valve Control Switch to CLOSE and observes the 1333A, B, C and D and the 1-5-1A, 1B, 2A and 2B Green status light is LIT, and the Red status light is OFF; and the Yellow RESET TIMER status light is LIT.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: One minute after the Governor Valves were CLOSED the 86BU will actuate and close the Turbine Stop Valves.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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Terminating Cue:

Evaluation on this JPM is complete.

STOP TIME:

Job Performance Measure No.: 2016 Systems - Control Room JPM B

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS: The plant is stabilized at 37% power.

INITIATING CUE: Monitor the plant and respond as required.

SIM JPM C

Developed By: _____ **Date:** _____
Instructor/Developer

Concurred By: _____ **Date:** _____
Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____
Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Restore PRT to Normal Operating ConditionsJPM No.: 2016 Systems - Control Room JPM C (Alternate Path)

K/A Reference: 007 A1.01 (2.9/3.1)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Operator with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

- Initial Conditions:
- The plant is at 100% power.
 - APP-003-D3, PRT HI/LO LEVEL, has alarmed.
 - The cause of the low level is known leakage from the PRT to the RCDT.
 - PRT level is stable at 67%.

- Initiating Cue:
- The CRS has directed you to restore PRT level to normal IAW OP-103, Pressurizer Relief Tank Control System.
 - All of the prerequisites of Section 4.0 are complete.

Task Standard: The operator will refill the PRT in accordance with Section 8.2.2 of OP-103; and then diagnose and relieve the hydraulic lock on RC-519B in accordance with Section 8.4.1 of OP-103.

Required Materials: None

General References: OP-103 (Pressurizer Relief Tank Control System), Rev 21

2016 Systems - Control Room JPM C

NUREG 1021, Revision 10

Job Performance Measure Worksheet

Handouts: Handout 1: Blank Copy of OP-103

Time Critical Task: NO

Validation Time: 10 minutes

NOTE: This JPM should be pre-briefed in the briefing room.

<u>Critical Step Justification</u>	
Step 2	This step is critical because placing a PW Pump control switch to START is necessary to refill the PRT in accordance with Section 8.2.2 of OP-103.
Step 3	This step is critical because placing the RC-519C control switch to OPEN is necessary to refill the PRT in accordance with Section 8.2.2 of OP-103.
Step 4	This step is critical because placing the RC-519A and B control switch to OPEN is necessary to refill the PRT in accordance with Section 8.2.2 of OP-103.
Step 9	This step is critical because placing the RC-519A and B control switch to CLOSE is necessary to refill the PRT in accordance with Section 8.2.2 of OP-103.
Step 10	This step is critical because placing the RC-519C control switch to CLOSE is necessary to refill the PRT in accordance with Section 8.2.2 of OP-103.
<u>Alternate Path Critical Step Justification</u>	
Step 15	This step is critical because cycling RC-519C open and closed is necessary to relieve the hydraulic lock on RC-519B in accordance with Section 8.4.1 of OP-103.

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Construct Scenario File 006_JPM_C as follows:

- IOR doRCSAAO212d e:006_RC_519AB_OPEN f:ON (Over-Ride RC-519B to OPEN when Switch taken to OPEN)
- IOR do CNMAOO086J e:006_519AB_OPEN f:OFF (Over-Ride RC-519A/B CIV Indication to OFF)

To be inserted after RC-519C is CLOSED during Initial Fill of PRT (JPM Step 12)

- \$006_RC_519C_OPEN DOR doRCSAAO212D (Removes Over-Ride for RC-519B when RC-519C is OPEN)
- \$600_RC_519C_OPEN DOR doCNMAOO086J (Removes Over-Ride on RC-519A/B CIV Indication)

2. Reset simulator to IC-5, 100% Power.

3. Place in RUN, execute Scenario File 006_JPM_C and allow time to stabilize.

4. Drain PRT to ≈67% (Open RC-523 until PRT level 67% and Close RC-523.

5. Verify PRT conditions as follows: 103°F temperature, 67% level and 3 psig pressure.

6. Stabilize the plant.

7. Freeze the Simulator.

OR

1. Reset Simulator to Temporary Snap IC-602 (July, 2015).

2. Scenario File 006_JPM_C

NOTE: Booth Instructor verify that two additional overrides are available to be inserted at Step 11 of this JPM.

3. Perform Attachment 2 (Simulator Setup For Exams) of TAP-411.

4. Place Simulator in Run when Operator assumes the watch.

PERFORMANCE INFORMATION

(Critical Steps are identified as such in right-hand column)

Provide Operator with Initial Conditions/Cue (Last Page of this JPM) and Handout 1.

START TIME: _____

NOTE:

PRT temperatures of greater than 120°F should be reduced by alternately adding Primary Water to the PRT and draining the PRT. (SER 93-007)

Maximum cooling effect can be achieved by leaving the added Primary Water in the PRT for at least 10 minutes prior to draining. (SER 93-007)

STEP 1: Verify the following initial conditions are satisfied:

- a. All prerequisites of Section 4.0 are complete
- b. Pressurizer Relief Tank level is less than 80%.
- c. Draining the PRT is NOT in progress.
(Step 8.2.2.1)

___ SAT

STANDARD: The operator reads the Notes, and proceeds.

___ UNSAT

The operator Verifies all initial conditions satisfied (Initial Cue).

EXAMINER'S CUE: If asked, section 4.0 prerequisites are complete.

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

PERFORMANCE INFORMATION

CAUTION

Operating two Primary Water Pumps can cause inadvertent filling of the RCS if the RCS is depressurized and vented through a PORV when two Primary Water Pumps are operating. Water may makeup to the RCS via the PRT spargers if the PRT is filled faster than it can vent.

STEP 2: Verify a Primary Water Pump is OPERATING.
(Step 8.2.2.2)

STANDARD: The operator reads the Caution, and proceeds.

The operator observes the "A" and "B" Primary Water Pump Green status lights are LIT and the Red status lights are OFF, and determines that neither PW Pump is RUNNING.

The operator places the "A" Primary Water Pump Control Switch to START and observes the Red status light is LIT and the Green status light is OFF.

OR

The operator places the "B" Primary Water Pump Control Switch to START and observes the Red status light is LIT and the Green status light is OFF.

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: The "A" Primary Water Pump is in AUTO, set-up for Auto Makeup.

The operator may start either the "A" or the "B" Primary Water Pump.

BOOTH OPERATOR CUE: NONE

COMMENTS:

**CRITICAL
STEP**

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

<p><u>STEP 5:</u> Monitor PRT for rising level (Step 8.2.2.5)</p> <p><u>STANDARD:</u> The operator observes rising PRT level on LI-470 or ERFIS.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The normal PRT Level band is 70-80%. It is expected that APP-003-C3, PRT HI PRESS, is an expected alarm during this evolution.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u> IF the expected rise in level does NOT occur, THEN stop filling AND investigate. (Step 8.2.2.6)</p> <p><u>STANDARD:</u> The operator observes rising PRT level on LI-470 or ERFIS.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The normal PRT Level band is 70-80%. It is expected that APP-003-C3, PRT HI PRESS, is an expected alarm during this evolution.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

NOTE: Increasing PRT level will cause PRT pressure to rise, possibly to the high pressure alarm setpoint of 5 psig.

STEP 7: Recognize/report PRT Hi Pressure alarm (APP-003 C3) received.
Monitors PRT pressure and reports value and that it is an expected alarm due to filling

___ SAT

STANDARD: The operator reads the Note, and proceeds.

The operator checks PRT pressure >5 psig due to filling, informs the CRS it is an expected alarm

___ UNSAT

EXAMINER'S CUE: As CRS, acknowledge report

EXAMINER'S NOTE: This is an expected alarm as the procedure note states. It is not expected that the operator will address the alarm and/or condition until after filling is completed. If the operator does address this alarm, if it decided to vent the PRT to reduce pressure, state that "Another Operator will address this alarm."

BOOTH OPERATOR CUE: NONE

COMMENTS:

PERFORMANCE INFORMATION

<p><u>STEP 8:</u> WHEN PRT level is between 70% and 80%, THEN perform the following:</p> <ul style="list-style-type: none">a. Stop the Primary Water Pumpb. Verify one Primary Water pump is in AUTO. (Step 8.2.2.7a&b) <p><u>STANDARD:</u> If the “A” Primary Water Pump was previously started, the operator places the “A” Primary Water Pump Control Switch to STOP and observes the Green status light is LIT and the Red status light is OFF.</p> <p>The operator places the “A” Primary Water Pump Control Switch to AUTO.</p> <p>OR</p> <p>If the “B” Primary Water Pump was previously started, the operator places the “B” Primary Water Pump Control Switch to STOP and observes the Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER’S CUE: NONE</p> <p>EXAMINER’S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 9:</u> Close RC-519A & B (Step 8.2.2.7c)</p> <p><u>STANDARD:</u> The operator places and holds the RC-519A & B Control Switch to CLOSE and observes the RC-519A Green status light is LIT and the Red status light is OFF.</p> <p>The operator observes that the RC-519B Red and Green status lights are LIT (Alternate Path – Mitigated in a later Step).</p> <p>The operator reports to the CRS that RC-519B has not fully CLOSED.</p> <p>EXAMINER'S CUE: As CRS, acknowledge report</p> <p>If a request is made to cycle RC-519A & B to attempt to verify RC-519B operation, as CRS then respond no do not cycle the valve</p> <p>EXAMINER'S NOTE: A single Control Switch controls both valves</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 10:</u> Close RC-519C (Step 8.2.2.7d)</p> <p><u>STANDARD:</u> The operator places the RC-519C Control Switch to CLOSE and observes the Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: Insert the last two commands IAW 006_JPM_C File to remove over-rides once RC-519C is closed.</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 11:</u> IF PRT level is greater than or equal to 83% OR PRT temperature is greater than 120°F, THEN lower the PRT level in accordance with the appropriate Section of this procedure, Draining the PRT When Pressurizer Temperature is Greater Than Or Equal to 200°F OR Draining the PRT When Pressurizer Temperature is Less Than 200°F. (Step 8.2.2.8)</p> <p><u>STANDARD:</u> The operator observes PRT level on LI-470 (or ERFIS) is <83% and PRT temperature on TI-471 (or ERFIS) is <120°F</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 12:</u> IF RC-519A or RC-519B do NOT fully close, THEN relieve the hydraulic lock in accordance with the Relieving Hydraulic Lock on RC-519A AND RC-519B Section of this procedure (Alternate Path – RC-519B Hydraulic Lock has previously occurred and is Mitigated Here). (Step 8.2.2.9)</p> <p><u>STANDARD:</u> The operator reviews the OP-103 Table Of Contents and determines that Section 8.4.1 is required, and proceeds to this section.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: If the operator addresses APP-003-C3 prior to addressing the hydraulic lock, when it decided to vent the PRT to reduce pressure, state that "Another Operator will address this alarm."</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

NOTE: The RCS System Engineer WILL need to be NOTIFIED WHEN the following section is PERFORMED to relieve hydraulic lock on RC-519A AND RC-519B for Engineering Trending Purposes.

STEP 13: Relieving Hydraulic Lock on RC-519A AND RC-519B:
Verify the following initial conditions are satisfied:
a. RC-519A & B, PW TO CV ISO, control switch is in the CLOSE position and one OR both valves indicate in mid position.
(Step 8.4.1.a)

STANDARD: The operator reads the Note, and proceeds.

The operator observes the RC-519A Green status light is LIT and the Red status light is OFF.

The operator observes the RC-519B Red and Green status lights are LIT.

EXAMINER'S CUE: If the operator notifies the CRS or the System Engineer, acknowledge as the CRS.

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

<p><u>STEP 14:</u> Verify the Post Accident Sampling System is NOT in operation. (Step 8.4.1.b)</p> <p><u>STANDARD:</u> Operator verifies PASS is not operating</p> <p>EXAMINER'S CUE: If asked about the status of this system, ask the operator what they would expect the status to be in the current plant condition. THEN, indicate that the system is as expected.</p> <p>EXAMINER'S NOTE: The PASS is ONLY operated under accident conditions, which do NOT exist.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 15:</u> IF RC-519B is indicating in mid position, THEN cycle RC-519C, PW TO PRT ISO (Step 8.4.2)</p> <p><u>STANDARD:</u> The operator places the RC-519C Control Switch to OPEN and observes the Red status light is LIT and the Green status light is OFF.</p> <p> The operator places the RC-519C Control Switch to CLOSE and observes the Green status light is LIT and the Red status light is OFF.</p> <p> The operator observes the RC-519B Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: If the operator informs the CRS of the valve position change, acknowledge as the CRS.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 16:</u> IF RC-519A is indicating in mid position, THEN perform the following:</p> <ul style="list-style-type: none"> a. Verify neither Primary Water Pump is OPERATING. b. Close breaker 15 on Power Panel 27. c. Open HCV-4176, CDT ISOLATION. d. Open HCV-4174, PZR RELIEF TANK ISOLATION. e. Close HCV-4176, CDT ISOLATION. f. Close HCV-4174, PZR RELIEF TANK ISOLATION. g. Open breaker 15 on Power Panel 27. <p>(Step 8.4.1.3)</p> <p><u>STANDARD:</u> The operator recognizes the sub-steps under Section 8.4.1.3 are not applicable and annotates the steps with "N/A"</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>NOTE: Power Panel 27 is located on the west side of the PASS panel.</p>	
<p><u>STEP 17:</u> IF RC-519A OR RC-519B is still indicating mid position, THEN declare the valve out of service AND refer to ITS LCO 3.6.3. (Step 8.4.1.4)</p> <p><u>STANDARD:</u> The operator reads the Note, and proceeds.</p> <p>The operator recognizes this step is N/A and marks it N/A</p> <p>EXAMINER'S CUE: Inform the operator you will have another operator restore PRT pressure to normal</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

Terminating Cue:

Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2016 Systems - Control Room JPM C

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100% power.
- APP-003-D3, PRT HI/LO LEVEL, has alarmed.
- The cause of the low level is known leakage from the PRT to the RCDT.
- PRT level is stable at 67%.

INITIATING CUE:

- The CRS has directed you to restore PRT level to normal IAW OP-103, Pressurizer Relief Tank Control System.
- All of the prerequisites of Section 4.0 are complete.

SIM JPM D

Developed By: _____ **Date:** _____
Instructor/Developer

Concurred By: _____ **Date:** _____
Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____
Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Reactor Startup with Ejected Control Rod JPM No.: 2016 Systems - Control Room JPM D (Alternate Path)

K/A Reference: 001 A1.06 (4.1/4.4)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- The plant is at 10^{-8} amps in the Intermediate Range.
- The RCS is at normal operating temperature and pressure.
- A plant startup is in progress IAW GP-003, Normal Plant Startup From Hot Shutdown to Critical, and complete through Step 8.4.6.
- You are the OATC.

Initiating Cue:

- The CRS has directed you to pull control rods to the POAH and stabilize reactor power between 3-5% by continuing with Step 8.4.7 of GP-003.
- The BOP will control Balance of the Plant Systems.

Task Standard: The operator will raise reactor power to the POAH and then stabilize power between 3-5%. Then, the operator will manually trip or respond to an automatic reactor trip following the ejected rod and manually actuate Safety Injection by depressing both SI pushbuttons.

Required Materials: None

Job Performance Measure Worksheet

General References: GP-003 (Normal Plant Startup From Hot Shutdown to Critical), Rev 105
APP-004 (First Out Reactor Trips), Rev 18
EOP-E-0 (Reactor Trip or Safety Injection), Rev 6
AOP-001 (Malfunction of Reactor Control System), Rev 33
AOP-016 (Excessive Primary Plant Leakage), Rev 23
OMM-22 (Emergency Operating Procedures User's Guide), Rev 45

Handouts: Handout 1: Section 8.4 of GP-003 marked up for this JPM to Step 8.4.6.

Time Critical Task: NO

Validation Time: 12 minutes

<u>Critical Step Justification</u>	
Step 1	This step is critical because placing the Manual Rod Control Switch to the OUT position and maintaining plant parameters as required is necessary to raise reactor power to the POAH and then stabilize power between 3-5%.
Step 2	This step is critical because placing the Manual Rod Control Switch to the OUT and/or IN position as necessary to maintain Reactor Power between 3-5%, and Tavg between 547°F and 551°F is necessary to raise reactor power to the POAH and then stabilize power between 3-5%.
<u>Alternate Path Critical Step Justification</u>	
Step 9	This step is critical because pressing both SI actuation pushbuttons is necessary to manually actuate SI.

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Construct Scenario File 006_JPM_D as follows:
 - IMF SIS01A, 2: Failure_To_INITIATE, (SI A Fails to AUTO actuate)
 - IMF SIS01B, 2: Failure_To_INITIATE, (SI B Fails to AUTO actuate O)
 - Event 1: \$006_ROD_EJECT IMF CRF05A f:2000, H-8 (Ejected Control Rod)
2. Reset simulator to IC-1, 10^{-8} amps IR.
3. Place in RUN, execute Scenario File 006_JPM_D and allow time to stabilize.
4. Ensure actions of GP-003 up to Step 8.4.6 are complete.
5. Stabilize the plant.
6. Freeze the Simulator.

OR

1. Reset Simulator to Temporary Snap IC-603 (August, 2015).
2. Scenario File 006_JPM_D
3. Perform Attachment 2 (Simulator Setup For Exams) of TAP-411.
4. Place Simulator in Run when Operator assumes the watch.

PERFORMANCE INFORMATION

(Critical Steps are identified as such in right-hand column)

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

START TIME: _____

NOTE:

The Point Of Adding Heat (POAH) is that power level identified by NO control rod motion and:

- If MTC is negative, then SUR will be LOWERING
- If MTC is positive, then SUR will be RISING
- Onset of RCS temperature rise, Onset of PZR pressure rise, Onset PZR level rise.
- Reduction in AUTO Charging Pump speed demand.
- Rising indication of AUTO Steam Dump demand on PC-464B, Steam Header Pressure, when Steam Dumps are being used for RCS Temperature Control.
- Small rise in Steam Generator Steam flow.

CAUTION

- Startup Rate shall not exceed 1.0 dpm. Maximum Reactor power is 5%.
- The Point Of Adding Heat should be approached slowly and cautiously. When the MSIVs are closed, heat removal capability of the Main Steam Line drains is limited.

STEP 1:

ADJUST Control Rod position as necessary to establish a positive SUR AND RAISE reactor power to the POAH.
(Step 8.4.7).

STANDARD:

The operator reads the Note and Caution, and proceeds.

The operator withdraws control rods by placing the Manual Rod Control Switch to the OUT position and adjusting Reactor Power to the Point of Adding Heat, Startup Rate does not exceed 1.0 dpm, Reactor Power does not exceed 5%.

The operator observes that SUR is lowering with RCS temperature rising, and determines that the POAH has been reached.

EXAMINER'S CUE:

As the operator announces each Control Rod withdrawal, as the CRS, acknowledge.

EXAMINER'S NOTE:

A second Steam Dump valve will open when temperature starts to rise.

BOOTH OPERATOR CUE: NONE

COMMENTS:

**CRITICAL
STEP**

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

<p><u>STEP 2:</u> ADJUST control rods as necessary to achieve the following while continuing with this procedure:</p> <p>RCS Tavg between 547°F and 551°F Reactor Power 3% to less than or equal to 5%. (Step 8.4.8).</p> <p><u>STANDARD:</u> The operator places the Manual Rod Control Switch to the OUT and/or IN position as necessary to maintain Reactor Power between 3-5%, and Tavg between 547°F and 551°F.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: A third Steam Dump valve will open when Reactor power is between 2-3%.</p> <p>APP-003-D4, TAVG-TREF DEV, may alarm while the operator is turning back power.</p> <p>When Reactor Power reaches 3%, Control Rod H-8 will be ejected from the core (Alternate Path)</p> <p>The following indications will be available to the operator:</p> <ul style="list-style-type: none"> • Several RTGB Annunciators alarm • Rod Bottom light for Control Rod H-8 is LIT • SUR is positive and rising • Neutron flux is rising • RCS pressure is lowering • Pzr level is lowering • Charging Pump speed is rising <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<u>STEP 3:</u>	Diagnose LOCA and manually trip Rx	
<u>STANDARD:</u>	The operator observes RTGB alarms and indications and manually trips the Rx by pressing one of two Rx Trip pushbuttons. The operator proceeds to EOP-E-0.	___ SAT ___ UNSAT
EXAMINER'S CUE:	NONE	
EXAMINER'S NOTE:	The operator may address one or more APPs, enter AOP-001, or AOP-016. The operator may manually trip the Reactor based on Attachment 3, Control Band and Trip Limit Guidance, of OMM-022, Emergency Operating Procedures User's Guide. If the operator does not manually trip, an automatic reactor trip will occur. Since the first four actions of EOP-E-0 are Immediate Actions, the operator may NOT address the procedure.	
BOOTH OPERATOR CUE:	NONE	
<u>COMMENTS:</u>		

PERFORMANCE INFORMATION

<p><u>STEP 4:</u> CHECK Reactor Trip: Reactor Trip AND Bypass Breakers - OPEN Rod position indicators - FULLY INSERTED Rod Bottom Lights - ILLUMINATED Neutron Flux - LOWERING (EOP-E-0 Step 1)</p> <p><u>STANDARD:</u> The operator observes parameters and determines that the Rx is tripped.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u> CHECK Turbine Trip: Both Turbine Stop Valves - CLOSED All MSR Purge AND Shutoff Valves - CLOSED (EOP-E-0 Step 2)</p> <p><u>STANDARD:</u> The operator observes parameters and determines that the Turbine is tripped.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 6:</u> CHECK Power To AC EMERGENCY BUSSES: CHECK Bus E-1 OR E-2 - AT LEAST ONE ENERGIZED CHECK Bus E-1 AND E-2 - BOTH ENERGIZED (EOP-E-0 Step 3)</p> <p><u>STANDARD:</u> The operator observes E-1/E-2 bus voltage and determines that both E-1 and E-2 are energized.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7:</u> CHECK SI Status:</p> <p>CHECK if SI is actuated: SI annunciators - ANY ILLUMINATED OR SI equipment - AUTO STARTED (EOP-E-0 Step 4/4.a)</p> <p><u>STANDARD:</u> The operator observes SI annunciators are LIT, and proceeds.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: If the SI annunciators are not lit, the operator will perform the step 4.a RNO (It is expected that the criteria to automatically actuate safety injection will either occur or be close to occurring during the performance of this step).</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 8:</u> CHECK BOTH trains of SI actuated: SI Pumps - TWO RUNNING RHR Pumps - BOTH RUNNING (EOP-E-0 Step 4.b)</p> <p><u>STANDARD:</u> The operator observes the “A” and “C” SI Pumps Green status lights are LIT, and Red status lights are EXTINGUISHED.</p> <p>The operator observes the “A” and “B” RHR Pumps Green status lights are LIT, and Red status lights are EXTINGUISHED.</p> <p>The operator proceeds to the RNO.</p> <p>EXAMINER’S CUE: NONE</p> <p>EXAMINER’S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 9:</u> Manually ACTUATE SI by depressing BOTH SI pushbuttons. (EOP-E-0 Step 4.b RNO)</p> <p><u>STANDARD:</u> The operator presses BOTH SI pushbuttons.</p> <p>The operator observes the "A" and "C" SI Pumps Red status lights are LIT, and Green status lights are EXTINGUISHED.</p> <p>The operator observes the "A" and "B" RHR Pumps Red status lights are LIT, and Green status lights are EXTINGUISHED.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: If the operator does not address EOP-E-0 but performs the actions from memory, AND the actions are NOT completed correctly, the operator may elect to address the procedure BEFORE indicating that the Immediate Actions are verified complete.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2016 Systems - Control Room JPM D

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 10^{-8} amps in the Intermediate Range.
- The RCS is at normal operating temperature and pressure.
- A plant startup is in progress IAW GP-003, Normal Plant Startup From Hot Shutdown to Critical, and complete through Step 8.4.6.
- You are the OATC.

INITIATING CUE:

- The CRS has directed you to pull control rods to the POAH and stabilize reactor power between 3-5% by continuing with Step 8.4.7 of GP-003.
- The BOP will control Balance of the Plant Systems.

SIM JPM E

Developed By: _____ **Date:** _____

Instructor/Developer

Concurred By: _____ **Date:** _____

Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____

Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Transfer to Long Term Recirculation JPM No.: 2016 Systems - Control Room JPM E (Alternate Path)

K/A Reference: EPE 011 EA1.11 (4.2/4.2)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- A large break LOCA has occurred.
- The plant is currently on Cold Leg Recirculation IAW EOP-ES-1.3, Transfer to Cold Leg Recirculation.
- RHR Cold Leg Recirculation flow is ≈3000 gpm.

Initiating Cue: The CRS has directed you to transfer to Long Term Recirculation IAW EOP-ES-1.4, Transfer to Long Term Recirculation.

Task Standard: The operator will align for Long Term Recirculation per EOP-ES-1.4, and align only the B RHR Pump for operation when it is determined that SI-863A has failed to OPEN.

Required Materials: None

General References: EOP-ES-1.3 (Transfer to Cold Leg Recirculation), Rev 0
EOP-ES-1.4 (Transfer to Long Term Recirculation), Rev 0
OMM-22 (Emergency Operating Procedures User's Guide), Rev 45

Job Performance Measure Worksheet

Handouts: Handout 1: Blank Copy of EOP-ES-1.4.

Time Critical Task: YES - Siemen's fuel Analysis for LBLOCA, ESR 99- 00273 indicates that the operator must Restore Core cooling flow within 6 minutes when transferring to Piggy-Back Mode (Maximum of 6 minutes of no flow when transferring to the Piggy-Back Mode)

Validation Time: 11 minutes

<u>Critical Step Justification</u>	
Step 3	This step is critical because placing the A RHR Pump Control Switch to STOP is necessary to align for Long Term Recirculation per EOP-ES-1.4.
Step 4	This step is critical because placing the RHR-759A and 759B Control Switch to CLOSE is necessary to align for Long Term Recirculation per EOP-ES-1.4.
Step 5	This step is critical because placing the SI-863B Control Switch to CLOSE is necessary to align for Long Term Recirculation per EOP-ES-1.4.
Step 6	This step is critical because placing the SI-866A Control Switch to OPEN is necessary to align for Long Term Recirculation per EOP-ES-1.4.
Step 7	This step is critical because placing the SI-870A and B Control Switches to CLOSE is necessary to align for Long Term Recirculation per EOP-ES-1.4.
Step 11	This step is critical because placing the A or C SI Pump Control Switch to START is necessary to align for Long Term Recirculation per EOP-ES-1.4.
<u>Alternate Path Critical Step Justification</u>	
Step 10	This step is critical because placing the B RHR Pump Control Switch to START is necessary to align only the B RHR Pump for operation when it is determined that SI-863A has failed to OPEN.

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Construct Scenario File 006_JPM_E as follows:
 - IOR diSISAAI201 f:CLOSE (RHR Loop Recirc SI-863A fails to OPEN)
2. Reset simulator to IC-28, (Cold Leg Recirculation).
3. Place in RUN, execute Scenario File 006_JPM_E and allow time to stabilize.
4. Perform the following:
 - Stop "A" Primary Water Pump and place in AUTO
 - CLOSE FCV-114A and place in AUTO
 - Place Controller FCV-114A in AUTO
5. Acknowledge alarms on RR-1 and APP-036.
6. Freeze the Simulator.

OR

1. Reset Simulator to Temporary Snap IC-604 (August, 2015).
2. Place Simulator in Run, acknowledge alarms on RR-1 and APP-036, and Freeze Simulator.
3. Perform Attachment 2 (Simulator Setup For Exams) of TAP-411.
4. Place Simulator in Run when operator assumes the watch.

PERFORMANCE INFORMATION

(Critical Steps are identified as such in right-hand column)

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

START TIME: _____

NOTE: FOLDOUT for EOP-ES-1.4 is in effect.

STEP 1: CHECK Condition Below - ANY PRESENT
 APP-001-D4, RHR PIT A HI-HI LEVEL - ILLUMINATED
 OR
 APP-001-D5, RHR PIT B HI-HI LEVEL - ILLUMINATED
 OR
 EITHER RHR Pit level indication - GREATER THAN 24 INCHES

PERFORM the following:
 MONITOR RHR Pit indications.
 IF ANY of the RHR Pit level conditions noted occur, THEN GO TO
 EPP-24, Isolation Of Leakage In The RHR Pump Pit.
 GO TO Step 3.
 (Step 1 and 1 RNO).

STANDARD: The operator reads the Note, and proceeds.

The operator reviews the Foldout Page Criteria.

The operator observes APP-001-D4 and D5 are extinguished, and
 that LI-615 A and B are both less than 24 inches; and determines
 that there is no RHR Pit leakage and proceeds to Step 3.

___ SAT

___ UNSAT

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

PERFORMANCE INFORMATION

STEP 2:

DETERMINE Needed RHR Alignment:
CHECK RHR System alignment - IN PIGGY-BACK MODE

OBSERVE the CAUTION prior to Step 5 AND GO TO Step 5.
(Step 3 and 3 RNO.)

STANDARD:

The operator observes SI-863A and B Green status lights are LIT, and Red status lights are OFF (Or equivalent) and determines that RHR is NOT in PIGGY-BACK Mode and proceeds to the Caution prior to Step 5.

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

___ SAT

___ UNSAT

CAUTION: Steps 5 through 8 must be performed without delay to minimize the time without flow through the core.

PERFORMANCE INFORMATION

<p><u>STEP 3:</u> ALIGN Equipment To Obtain The Following Conditions: STOP ALL RHR Pumps (Step 5/5.a)</p> <p><u>STANDARD:</u> The operator reads the Caution, and proceeds.</p> <p> The operator places the "A" RHR Pump Control Switch to STOP and observes the Green status light is LIT and the Red status light is OFF.</p> <p> The operator observes the "B" RHR Pump Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The operator will likely read through Steps 5-8 ahead of time before performing actions.</p> <p> APP-001-A7, RHR HX LO FLOW, is an expected alarm.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p> <p>TIME CRITICAL START TIME: _____</p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 4:</u> ALIGN Equipment To Obtain The Following Conditions: CLOSE RHR HX Discharge Valves RHR-759A RHR-759B (Step 5/5.b)</p> <p><u>STANDARD:</u> The operator places the RHR-759A Control Switch to CLOSE and observes that the Green status light is LIT and the Red status light is OFF. The operator places the RHR-759B Control Switch to CLOSE and observes that the Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 5:</u> ALIGN Equipment To Obtain The Following Conditions: OPEN RHR Loop Recirc Valves SI-863A SI-863B (Step 5/5.c)</p> <p><u>STANDARD:</u> The operator places the SI-863A Control Switch to OPEN and observes that the Green status light remains LIT and the Red status light remains OFF (Alternate Path – mitigated in subsequent steps). The operator places the SI-863B Control Switch to OPEN and observes that the Red status light is LIT and the Green status light is OFF.</p> <p>EXAMINER'S CUE: If operator reports the failure of SI-863A to OPEN, acknowledge as the CRS.</p> <p>EXAMINER'S NOTE: The operator should not stop the procedure, the procedure is designed to subsequently mitigate the failure of SI-863A to OPEN. The operator may place the SI-863A Control Switch back to CLOSE.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>CAUTION: Opening SI-866A AND SI-866B, Hot Leg Injection Valves, with only one SI pump running will result in SI Pump runout.</p>	

PERFORMANCE INFORMATION

<p><u>STEP 6:</u> ALIGN For Hot Leg Recirculation: OPEN SI-866A, LOOP 3 HOT LEG INJ Valve (Step 6/6.a)</p> <p><u>STANDARD:</u> The operator reads the Caution, and proceeds.</p> <p> The operator places the key-operated SI-866A Control Switch to OPEN and observes that SI-866A Red status light is LIT and the Green status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7:</u> ALIGN For Hot Leg Recirculation: CLOSE BIT Outlet Valves: SI-870A SI-870B (Step 6/6.b)</p> <p><u>STANDARD:</u> The operator places the SI-870A Control Switch to CLOSE, and observes that the Green status light is LIT and the Red status light is OFF.</p> <p> The operator places the SI-870B Control Switch to CLOSE, and observes that the Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

CAUTION: RHR-759A AND RHR-759B, RHR HX Discharge Valves, are closed. The RHR Pumps will run dead-headed AND are subject to damage UNTIL the SI pumps are started.

STEP 8: ESTABLISH Hot Leg Recirculation Flow:
CHECK RHR-759A, RHR HX A DISCH Valve - CLOSED
(Step 7/7.a)

___ SAT

STANDARD: The operator reads the Caution, and proceeds.

The operator observes the RHR-759A Green status light is LIT, and Red status light is OFF.

The operator observes the RHR-759B Green status light is LIT, and Red status light is OFF.

___ UNSAT

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

PERFORMANCE INFORMATION

<p><u>STEP 9:</u> ESTABLISH Hot Leg Recirculation Flow: CHECK SI-863A, RHR LOOP RECIRC Valve - OPEN (Step 7/7.b)</p> <p><u>STANDARD:</u> The operator observes the SI-863A Green status light is LIT and determines that SI-863A is CLOSED (Alternate Path), and proceeds to Step 7.b RNO.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The operator has previously attempted to OPEN this valve, and it failed to OPEN. This procedure will address the compensatory actions now.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 10:</u> ESTABLISH Hot Leg Recirculation Flow: PERFORM the following: CLOSE RHR-759B, RHR HX B DISCH Valve. OPEN SI-863B, RHR LOOP RECIRC Valve. CLOSE SI-863A, RHR LOOP RECIRC Valve. START RHR Pump B. GO TO Step 8. (Step 7/7.b RNO)</p> <p><u>STANDARD:</u> The operator observes the RHR-759B Green status light is LIT and the Red status light is OFF. The operator observes the SI-863B Red status light is LIT and the Green status light is OFF. The operator places the SI-863A Control Switch in the CLOSE position and observes the Green status light is LIT and the Red status light is OFF. The operator places the "B" RHR Pump Control Switch to START and observes the Red status light is LIT and the Green status light is OFF. The operator proceeds to Step 8.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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<p><u>STEP 11:</u> START One SI Pump (Step 8)</p> <p><u>STANDARD:</u> The operator places the “A” or “C” SI Pump Control Switch to START, and observes the Red status light is LIT and the Green status light is OFF.</p> <p>EXAMINER’S CUE: NONE</p> <p>EXAMINER’S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p> <p>TIME CRITICAL STOP TIME: _____ (Less than 6 Minutes)</p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>						
<p><u>STEP 12:</u> CHECK Indicated Flow On The Appropriate Flow Meters:</p> <table border="1" data-bbox="331 1077 1011 1251"> <tr> <th>PATH</th><th>FLOW METERS</th></tr> <tr> <td>SI-866B</td><td>FI-940, SI Hot Leg Header Flow FI-933, SI Loop 2 Hot Leg Flow</td></tr> <tr> <td>SI-866A</td><td>FI-940, SI Hot Leg Header Flow FI-932, SI Loop 3 Hot Leg Flow</td></tr> </table> <p>(Step 9)</p> <p><u>STANDARD:</u> The operator observes FI-940 and determines flow to be 640-680 gpm. The operator observes FI-932 and determines flow to be 580-600 gpm.</p> <p>EXAMINER’S CUE: NONE</p> <p>EXAMINER’S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	PATH	FLOW METERS	SI-866B	FI-940, SI Hot Leg Header Flow FI-933, SI Loop 2 Hot Leg Flow	SI-866A	FI-940, SI Hot Leg Header Flow FI-932, SI Loop 3 Hot Leg Flow	<p>___ SAT</p> <p>___ UNSAT</p>
PATH	FLOW METERS						
SI-866B	FI-940, SI Hot Leg Header Flow FI-933, SI Loop 2 Hot Leg Flow						
SI-866A	FI-940, SI Hot Leg Header Flow FI-932, SI Loop 3 Hot Leg Flow						

PERFORMANCE INFORMATION

CAUTION: The operator should be sure that cavitation is taking place prior to transitioning to steps that attempt to mitigate screen blockage. The actions taken are beyond design basis AND should NOT be taken unless warranted. Stable indication on FI-605 may also be used as an aid in determining if cavitation is present in subsequent steps when RHR-759A OR RHR-759B AND RHR-744A OR RHR-744B are open.

STEP 13: CHECK RHR Pump Discharge Pressure - STABLE
PI-602A
PI-602B
(Step 10)

STANDARD: The operator reads the caution, and proceeds.

The operator observes PI-602B to be \approx 160 psig.

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

STEP 14:

DETERMINE If Flow Should Be Established To Cold Legs as follows:
 CHECK RCS pressure - LESS THAN 275 PSIG
 CHECK RHR Cold Leg Recirculation flow indicated in EOP-ES-1.3,
 Transfer To Cold Leg Recirculation
 CHECK CV Sump Screen status - HAS REMAINED CLEAR DURING
 RECIRCULATION
 CHECK ALL of the following - AVAILABLE

- FI-605, RHR TOTAL FLOW
- RHR-759A AND RHR-759B, RHR HX Discharge Valves
- SI-863A AND SI-863B, RHR LOOP RECIRC Valves
- RHR Pumps A AND B

(Step 11a-d and 11.d RNO)

___ SAT

___ UNSAT

STANDARD:

The operator observes PR-444 (or equivalent) to be 5 psig.
 The operator recalls that 3000 gpm of flow existed in the Cold Legs
 before this procedure started.
 The operator observes RHR discharge pressure to be steady at 150
 psig (or equivalent), and determines that no RHR Pump cavitation is
 occurring.
 The operator observes 0 gpm on FI-605.
 The operator observes the RHR-759A Green status light is LIT, and
 the Red status light is OFF.
 The operator observes the RHR-759B Green status light is LIT, and
 the Red status light is OFF.
 The operator observes the SI-863B Red status light is LIT and the
 Green status light is OFF.
 The operator observes the SI-863A Green status light is LIT and the
 Red status light is OFF.
 The operator recognizes that SI-863A is NOT available, and
 proceeds to Step 16.

EXAMINER'S CUE: NONE**EXAMINER'S NOTE:** NONE**BOOTH OPERATOR CUE:** NONE**COMMENTS:**

PERFORMANCE INFORMATION

<p><u>STEP 15:</u> CHECK Time Since Hot Leg Recirculation Established - GREATER THAN 16 HOURS</p> <p>WHEN 16 hours have elapsed, THEN GO TO Step 17. (Step 16 and 16 RNO)</p> <p><u>STANDARD:</u> The operator recognizes that the procedure must be stopped for 16 hours, and reports that the procedure must be placed on hold.</p> <p>EXAMINER'S CUE: Another operator will continue with this procedure</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2016 Systems - Control Room JPM E

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A large break LOCA has occurred.
- The plant is currently on Cold Leg Recirculation IAW EOP-ES-1.3, Transfer to Cold Leg Recirculation.
- RHR Cold Leg Recirculation flow is ≈ 3000 gpm.

INITIATING CUE:

The CRS has directed you to transfer to Long Term Recirculation IAW EOP-ES-1.4, Transfer to Long Term Recirculation.

SIM JPM F

Developed By: _____ **Date:** _____
Instructor/Developer

Concurred By: _____ **Date:** _____
Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____
Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Fill a Safety Injection AccumulatorJPM No.: 2016 Systems - Control Room JPM F

K/A Reference: 006 A4.02 (4.0/3.8)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- The plant is at 100% power.
- SI ACCUM C HI/LO LVL (APP-002-E4) alarm has been received and actions have been reviewed by the RO.
- You are the Licensed Dedicated Operator referred to in OP-202.
- Safety Injection Pump "A" has been walked down and pre-start checks are complete.

Initiating Cue: The CRS has briefed and directed you to fill SI Accumulator "C" to reset the low level alarm IAW OP-202, Section 5.2.1.

Task Standard: The operator will refill SI Accumulator "C" to reset the low level alarm without exceeding specified limits.

Required Materials: None

General References: OP-202 (Safety Injection and Containment Vessel Spray System), Rev 98
APP-002 (Engineering Safeguards), Rev 70

Job Performance Measure Worksheet

Handouts: Handout 1: OP-202, Section 5.2.1 marked up as follows:
 Step 5.2.1.1.a – Initialed
 Step 5.2.1.1.b Bullet 1 – Initialed
 Step 5.2.1.1.b Bullet 2 – NA'd
 Step 5.2.1.1.c – NA'd
 Step 5.2.1.1.d – Initialed
 Step 5.2.1.1.e (1) and (2) – NA'd

Time Critical Task: NO

Validation Time: 8 minutes

Job Performance Measure Worksheet

<u>Critical Step Justification</u>	
Step 2	This step is critical because placing the SI-869 Normal/Defeat switch in the NORMAL position is necessary to refill SI Accumulator "C" to reset the low level alarm without exceeding specified limits (Control power must be aligned to the valve to allow for RTGB operation).
Step 4	This step is critical because placing the SI-869 control switch to the OPEN position is necessary to refill SI Accumulator "C" to reset the low level alarm without exceeding specified limits (Open valve to align flowpath to SI Accumulator).
Step 5	This step is critical because placing the SI Pump "A" control switch to the START position is necessary to refill SI Accumulator "C" to reset the low level alarm without exceeding specified limits (Provides adequate flow and pressure to fill the SI Accumulator).
Step 7	This step is critical because placing the SI-851C control switch to the OPEN position, and then closing it within limits is necessary to refill SI Accumulator "C" to reset the low level alarm without exceeding specified limits (align fill path to appropriate accumulator and to secure filling at desired level).
Step 8	This step is critical because placing the SI Pump "A" control switch to STOP and returning it to the MID position is necessary to refill SI Accumulator "C" to reset the low level alarm without exceeding specified limits (secure fill source and prevent operating on recirculation for an extended period).
Step 10	This step is critical because placing the SI-869 control switch to the CLOSED position is necessary to refill SI Accumulator "C" to reset the low level alarm without exceeding specified limits (realign SI-869 to its normal Mode 1 alignment).
Step 11	This step is critical because placing the SI-869 Normal/Defeat switch in the DEFEAT position is necessary to refill SI Accumulator "C" to reset the low level alarm without exceeding specified limits (properly align SI-869 Control Power Defeat Switch as required for Mode 1).

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Reset simulator to IC-5, 100% Power.
2. Lower the C SI Accumulator Level as follows:
 - OPEN SI-852C
 - WHEN APP-002-B4, SI ACCUM C HI/LO LVL, is LIT, CLOSE SI-852C
 - Check C SI Accumulator level at 64%
3. Place in RUN and allow time to stabilize.
4. Freeze the Simulator.

OR

1. Reset Simulator to Temporary Snap IC-605 (August, 2015).
2. Perform Attachment 2 (Simulator Setup For Exams) of TAP-411.
3. Place Simulator in Run when Operator assumes the watch.

(Critical Steps are identified as such in right-hand column)

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

START TIME: _____

<p><u>STEP 1:</u> Check open SI-856A, SI PUMP RECIRC and SI-856B, SI PUMP RECIRC (Steps 5.2.1.2.a and b).</p> <p><u>STANDARD:</u> The operator observes SI-856A and B RED lights are LIT and the Green status lights are OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The operator may use ERFIS to monitor SI Accumulator "C" level. (ERFIS: QP ACCUM C) The Control Switches for these valves are located on the CV Sump Recirc Panel on the apron section of the RTGB below APP-002.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<u>STEP 2:</u>	ENSURE the Control Power Defeat switch for SI-869 is in the NORMAL position (Step 5.2.1.c)	<u>CRITICAL STEP</u>
<u>STANDARD:</u>	The operator places the SI-869 NORMAL/DEFEAT key switch in the NORMAL position and observes the Amber status light is LIT.	___ SAT
EXAMINER'S CUE:	If the operator requests an AO check breaker status, report that all requested breakers are open.	___ UNSAT
EXAMINER'S NOTE:	Key switch for SI-869 is located in the rear of the RTGB on the ECCS VALVES CONTROL POWER DEFEAT PANEL.	
BOOTH OPERATOR CUE:	NONE	
<u>COMMENTS:</u>		

NOTE

Based upon the numerous indications available to the Dedicated Operator of an SI actuation at the RTGB and the immediate response to isolate the SI Accumulator flowpath, an LCO declaration for SI Pump OR SI Flowpath Operability is NOT required.

The following step is a continuous action step which shall be performed when the stated condition is met.

PERFORMANCE INFORMATION

<p><u>STEP 3:</u> IF an SI actuation is received during filling, THEN IMMEDIATELY CLOSE the applicable SI Accumulator makeup valve AND PERFORM Step 5.2.1.2.m to restore the SI System lineup. (Step 5.2.1.d)</p> <p><u>STANDARD:</u> The operator reads the Notes, and proceeds. The operator reads step and acknowledges continuous actions step in the event of an SI actuation.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> Open SI-869, SI HOT LEG HDR. (Step 5.2.1.2.e)</p> <p><u>STANDARD:</u> The operator places the SI-869 Control Switch in the OPEN position and observes the Red status light LIT and the Green status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 5:</u> Start an SI Pump. (Step 5.2.1.2.f)</p> <p><u>STANDARD:</u> The operator will make an announcement regarding the pump start.</p> <p>The operator places the "A" SI Pump Control Switch in the START position and observes the Red status light is LIT and the Green status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: Starting the "A" SI Pump will cause APP-002-C3, BIT HDR HI PRESS, to alarm (Expected). The operator may address the APP.</p> <p>The announcement of the Pump start is NOT critical</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>NOTE: If the cooling unit for the train of the SI pump started is NOT operable, the opposite train unit can be started by placing its AUTO/RUN switch on the power supply breaker to RUN.</p>	
<p><u>STEP 6:</u> ENSURE at least one SI Pump Area Cooling unit (HVH-6A OR HVH-6B OR both) is operating. (Step 5.2.1.2.g)</p> <p><u>STANDARD:</u> The operator reads the Note, and proceeds.</p> <p>The operator observes the HVH-6A Red status light is LIT and the Green status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The HVH-6B Green status light is LIT.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

NOTE: The following are pressure and level limits/alarms for the SI Accumulators:

- High Pressure Alarm 646 psig
- Normal Operating Pressure 630 psig
- High Level Alarm 75 percent
- Low Level Alarm 67 percent

CAUTION

Filling the SI Accumulators can result in rapid indicated level changes due to the narrow span (approx. 14 inches) associated with the SI Accumulator level instruments and should be closely monitored.

STEP 7: IF SI Accumulator "C" is to be filled, THEN perform the following:
(Step 5.2.1.2.j)

- 1) Open SI-851C, MAKEUP.
- 2) Monitor the level and pressure of SI Accumulator "C".
- 3) When desired level is obtained, then close SI-851C.

**CRITICAL
STEP**

___ SAT

STANDARD: The operator reads the Note and the Caution, and proceeds.

The operator places the SI-851C Control Switch to OPEN and observes the Red status light is LIT and the Green status light is OFF.

The operator observes LI-928 and PI-929 and LI-930 and PI-931 during filling.

When the accumulator level is > 67% and < 75% and accumulator pressure is > 614 psig and < 646 psig, the operator places the SI-851C Control Switch to CLOSE and observes the Green status light is LIT and the Red status light is OFF.

___ UNSAT

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: APP-002-E4 will clear during the filling process.

BOOTH OPERATOR CUE: NONE

COMMENTS:

PERFORMANCE INFORMATION

<p><u>STEP 8:</u> Stop the operating SI Pump. (Step 5.2.1.2.k)</p> <p><u>STANDARD:</u> The operator places the A SI Pump Control Switch in the STOP position and observes the Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: APP-002-C3 will clear when the A SI Pump is stopped.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 9:</u> Verify both SI Pump Area Cooling units are OFF. (Step 5.2.1.2.l)</p> <p>1) HVH-6A 2) HVH-6B</p> <p><u>STANDARD:</u> The operator observes the HVH-6A Green status light is LIT and the Red status light is OFF.</p> <p>The operator observes the HVH-6B Green status light is LIT and the Red status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<u>STEP 10:</u> Close SI-869, SI HOT LEG HDR. (Step 5.2.1.2.m)	<u>CRITICAL STEP</u>
<u>STANDARD:</u> The operator places the SI-869 Control Switch in the CLOSE position and observes the Green status light LIT and the Red status light is OFF.	___ SAT
EXAMINER'S CUE: NONE	___ UNSAT
EXAMINER'S NOTE: NONE	
BOOTH OPERATOR CUE: NONE	
<u>COMMENTS:</u>	
NOTE: In Mode 1, 2 OR 3 the Control Power Defeat switch for SI-869 should be in the DEFEAT position. In Mode 5 OR 6 the Control Power Defeat switch for SI-869 should be in the NORMAL position. In Mode 4 the position of the Control Power Defeat switch for SI-869 is determined by GP-002 OR GP-007.	

<u>STEP 11:</u>	ENSURE the Control Power Defeat switch for SI-869 in the position determined by plant status. (Step 5.2.1.2.n)	<u>CRITICAL STEP</u>
<u>STANDARD:</u>	The operator reads the Note, and proceeds. The operator places the SI-869 NORMAL/DEFEAT key switch in the DEFEAT position and observes the Amber status light is OFF.	___ SAT
EXAMINER'S CUE:	NA	___ UNSAT
EXAMINER'S NOTE:	Key switch for SI-869 is located in the rear of the RTGB on the ECCS VALVES CONTROL POWER DEFEAT PANEL.	
BOOTH OPERATOR CUE:	NONE	
<u>COMMENTS:</u>		

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2016 Systems - Control Room JPM F

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100% power.
- SI ACCUM C HI/LO LVL (APP-002-E4) alarm has been received and actions have been reviewed by the RO.
- You are the Licensed Dedicated Operator referred to in OP-202.
- Safety Injection Pump "A" has been walked down and pre-start checks are complete.

INITIATING CUE:

The CRS has briefed and directed you to fill SI Accumulator "C" to reset the low level alarm IAW OP-202, Section 5.2.1.

SIM JPM G

Developed By: _____ **Date:** _____

Instructor/Developer

Concurred By: _____ **Date:** _____

Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____

Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Remove Source Range Channel N-31 From ServiceJPM No.: 2016 Systems - Control Room JPM G

K/A Reference: 015 A4.03 (3.8/3.9)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- A plant startup is in progress in accordance with GP-003, Normal Plant Startup From Hot Shutdown to Critical.
- SR Channel N-31 has just failed low.

Initiating Cue:

- The CRS has directed you to remove SR Channel N-31 from service IAW OWP-011, Nuclear Instrumentation.
- The latest Revision of OWP-011 has been verified to be Rev 24, and the associated Work Request is 16-02.

Task Standard: The operator will remove SR Channel N-31 from service IAW NI-5 of OWP-011.

Required Materials: None

General References: OWP-011 (Nuclear Instrumentation), Rev 24
GP-003, Normal Plant Startup From Hot Shutdown to Critical, Rev 105

Job Performance Measure Worksheet

Handouts: Handout 1: Blank Copy of OWP-11.

Time Critical Task: NO

Validation Time: 6 minutes

<u>Critical Step Justification</u>	
Step 2	This step is critical because removing NI-31 from ERFIS Scan is necessary to remove SR Channel N-31 from service IAW NI-5 of OWP-011.
Step 4	This step is critical because placing the Start Up Rate Channel Select Switch to the N32, N35 or N36 is necessary to remove SR Channel N-31 from service IAW NI-5 of OWP-011.
Step 5	This step is critical because placing the NI-31 Level Trip Bypass Switch to the BYPASS position is necessary to remove SR Channel N-31 from service IAW NI-5 of OWP-011.

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Reset simulator to IC-8, (47.25 hours tripped, Critical at 48 hours).
2. Place in RUN and allow time to stabilize.
3. Perform the following:
 - Rod Bank Select Switch to SBB
 - Withdrawal SBB rods to 225 Steps
 - Rod Bank Select Switch to M
 - Withdrawal CBA rods to 22 Steps
 - Place Audio Count Rate Selector in the N31 position
 - Place the Startup Rate Channel Select Switch in the N31 position
4. Insert Malfunction NIS01A, Final: 1 (SR N-31 fails LOW)
5. Acknowledge alarms and stabilize the plant.
6. Freeze the Simulator.

OR

1. Reset Simulator to Temporary Snap IC-606 (August, 2015).
2. Place Simulator in Run when Operator assumes the watch.

(Critical Steps are identified as such in right-hand column)

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

START TIME: _____

<p><u>STEP 1:</u> Obtain and review the procedure. (OWP-011, NI-5, Steps 1-7).</p> <p><u>STANDARD:</u> The operator reviews Handout 1 and identifies that NI-5 must be addressed. The operator verifies that Revision 24 is the latest revision (Initial Cue), and prints their name, signs and dates Step 1. Operator reviews Steps 2-7.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The operator may use Green Dots to flag the expected annunciators.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 2:</u> Complete Step 8: REMOVE NI-31 from ERFIS SCAN: NIN0031A. (NI-5 Valve, Breaker, Switch Lineup).</p> <p><u>STANDARD:</u> The operator selects F3 on ERFIS (Master Menu) The operator selects ADMIN (Administrative Functions Menu) The operator selects DR (Del/Res Point From/To Sacn or Alarm) The operator depresses the DELETE SCAN pushbutton The operator enters Point I.D. NIN0031A</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: This can be checked on ERFIS as follows: Select F3 (Master Menu) Select REAL (Real Time Data Menu) Select DBO (Point Information/Value Display) Enter NNI0031A Observe QUALITY to be DEL</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u> Complete Step 8: AUDIO COUNT RATE CHANNEL – CHANNEL SELECTOR Switch (NI-5 Valve, Breaker, Switch Lineup).</p> <p><u>STANDARD:</u> The operator pulls and rotates the Audio Count Rate Channel Selector Switch counter-clockwise to the N32 position, and initials the Selected to SR 32 block on the NI-5 Valve, Breaker, Switch Lineup.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: This switch is on the Audio Count Rate Drawer</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 4:</u> Complete Step 8: START UP RATE CHANNEL SELECT Switch * (NI-5 Valve, Breaker, Switch Lineup).</p> <p><u>STANDARD:</u> The operator places the Start Up Rate Channel Select Switch to the N32; records the selected instrument in the NI block position, and initials the NI-5 Valve, Breaker, Switch Lineup.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: This switch is on the Comparator and Rate Drawer</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u> Complete Step 8: LEVEL TRIP Switch (NI-5 Valve, Breaker, Switch Lineup).</p> <p><u>STANDARD:</u> The operator places the NI-31 Level Trip Bypass Switch to the BYPASS position, and initials the NI-5 Valve, Breaker, Switch Lineup.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The operator will acknowledge APP-005-D4, NIS TRIP/DROP ROD BYPASS, as an expected alarm.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 6:</u> Complete Step 8: NIS TRIP BYPASS NI-31 Status Light (NI-5 Valve, Breaker, Switch Lineup).</p> <p><u>STANDARD:</u> The operator observes the NI-31 LEVEL TRIP BYPASS status light is LIT and initials the NI-5 Valve, Breaker, Switch Lineup.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7:</u> Complete Step 8: HIGH FLUX AT SHUTDOWN Switch (NI-5 Valve, Breaker, Switch Lineup).</p> <p><u>STANDARD:</u> The operator places the NI-High Flux At Shutdown Switch to the BLOCK position, and initials the NI-5 Valve, Breaker, Switch Lineup.</p> <p>The operator signs and dates Step 8 of NI-5.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: The operator will acknowledge APP-005-B1, HI FLUX AT SHUTDOWN ALARM BLOCK, as an expected alarm.</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2016 Systems - Control Room JPM G

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A plant startup is in progress in accordance with GP-003, Normal Plant Startup From Hot Shutdown to Critical.
- SR Channel N-31 has just failed low.

INITIATING CUE:

- The CRS has directed you to remove SR Channel N-31 from service IAW OWP-011, Nuclear Instrumentation.
- The latest Revision of OWP-011 has been verified to be Rev 24, and the associated Work Request is 16-02.

SIM JPM H

Developed By: _____ **Date:** _____
Instructor/Developer

Concurred By: _____ **Date:** _____
Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____
Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Start a Reactor Coolant PumpJPM No.: 2016 Systems - Control Room JPM H

K/A Reference: 003 A4.03 (2.8/2.5)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

- Initial Conditions:
- A plant startup is in progress in accordance with GP-002, Cold Shutdown to Hot Sub-Critical at No-Load Tavg.
 - The “A” RCP is running.
 - It is intended to start the “B” RCP next.
 - Section 8.1 of OP-101, Reactor Coolant System and Reactor Coolant Pump Startup and Operation, has been completed through Step 8.1.1.2.y in preparation for starting the Reactor Coolant Pump.
 - It is intended to bypass the Degraded Grid Protection prior to the RCP start and return it to service after the RCP is started per OP-101, and an AO is standing by to assist in this process.

Initiating Cue: The CRS has directed you to start the B Reactor Coolant Pump by continuing with Step 8.1.1.2.z of OP-101.

Task Standard: The operator will start the B RCP IAW OP-101.

Required Materials: None

Job Performance Measure Worksheet

General References: OP-101 (Reactor Coolant System and Reactor Coolant Pump Startup and Operation), Rev 74
AD-OP-ALL-1000 (Conduct of Operations) Rev 4
AOP-018 (Reactor Coolant Pump Abnormal Conditions), Rev 31
APP-001 (Miscellaneous NSSS), Rev 60
Technical Specification LCO 3.3.5 (Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation), Amendment 176

Handouts: Handout 1: Section 8.1 of OP-101 marked up through Step 8.1.1.2.y for this JPM.

Time Critical Task: NO

Validation Time: 11 minutes

NOTE: This JPM should be pre-briefed in the Briefing Room.

<u>Critical Step Justification</u>	
Step 2	This step is critical because contacting the AO and directing the performance of Step 8.1.1.2.aa.1&3 is necessary to start the B RCP IAW OP-101.
Step 3	This step is critical because placing the Bearing Lift Pump in the START position, and observing that the LIFT PRESSURE status light is LIT is necessary to start the B RCP IAW OP-101.
Step 6	This step is critical because after 2 minutes with the Bearing Oil Lift Pump running, placing the B RCP Control Switch to the START position is necessary to start the B RCP IAW OP-101.
Step 8	This step is critical because contacting the AO and directing the performance of Step 8.1.1.2.gg.1-6 is necessary to start the B RCP IAW OP-101.
Step 10	This step is critical because contacting the AO and directing the performance of Step 8.1.1.2.ii.1-6. is necessary to start the B RCP IAW OP-101.

Job Performance Measure Worksheet

SIMULATOR OPERATIONAL GUIDELINES

1. Construct Scenario File 006_JPM_H as follows:
 - IRF EPSL007 f:DEFEAT
 - IRF EPSL008 f:DEFEAT
 - IRF EPSL007 f:NORMAL
 - IRF EPSL008 f:NORMAL
2. Reset simulator to IC-35, 0% Power, Mode 3 at NOP/NOT.
3. Place in RUN execute Scenario File 006_JPM_H, and allow time to stabilize.
4. Place PCV-455A in manual and close "B" Loop Spray Valve (PCV-455A).
5. Perform the actions of Section 8.1.1 of OP-101 up to Step 8.1.1.2.y.
6. Stabilize the plant.
7. Freeze the Simulator.

OR

1. Reset Simulator to Temporary Snap IC-607 (August, 2015).
2. Open Scenario File 006_JPM_H.

NOTE: Booth Instructor will need to operate Events 1-4 when contacted by the operator at JPM Steps 2, 8 & 10.

3. Perform Attachment 2 (Simulator Setup For Exams) of TAP-411.
4. Place Simulator in Run when Operator assumes the watch.

(Critical Steps are identified as such in right-hand column)

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

START TIME: _____

NOTES

ITS LCO 3.3.5 allows bypassing Degraded Grid Protection when the Unit is NOT in Mode 1. Conservative operating principles have determined that bypassing the Degraded Grid Protection will only be permitted when the Unit is NOT in Mode 1 OR Mode 2. (NCR 151422)

Degraded Grid Voltage Protection is limited to one hour in the DEFEAT position before it shall be returned to NORMAL. (NCR 151422)

STEP 1: IF required, THEN ENTER LCO 3.3.5 Action Statement due to bypassing Degraded Grid Protection, AND RECORD time. (Step 8.1.1.2.z).

___ SAT

STANDARD: The operator reads the Note, and proceeds.

The operator records the time in the block provided.

The operator informs the CRS that LCO 3.3.5 may need to be entered.

___ UNSAT

EXAMINER'S CUE: As the CRS, acknowledge report.

EXAMINER'S NOTE: NONE

BOOTH OPERATOR CUE: NONE

COMMENTS:

PERFORMANCE INFORMATION

<p><u>STEP 2:</u> IF degraded grid protection is in service, THEN DEFEAT the degraded grid voltage protection as follows:</p> <ul style="list-style-type: none"> • On the front of Bus E-1, Cubicle 18A, INSTALL key in the DEGRADED GRID VOLTAGE keylock switch AND PLACE in the DEFEAT position. • CHECK annunciator APP-010-F5, DEGRADED GRID E-1 PROT BYPD, is ILLUMINATED. • On the front of Bus E-2, Cubicle 28A, INSTALL key in the DEGRADED GRID VOLTAGE keylock switch AND PLACE in the DEFEAT position. • CHECK annunciator APP-010-F6, DEGRADED GRID E-2 PROT BYPD, is ILLUMINATED. (Step 8.1.1.2.aa). <p><u>STANDARD:</u> The operator contacts AO and directs performance of Step 8.1.1.2.aa.1&3.</p> <p>The operator observes APP-010-F5, DEGRADED GRID E-1 PROT BYPD, is LIT and is an expected alarm.</p> <p>The operator observes APP-010-F6, DEGRADED GRID E-2 PROT BYPD, is LIT and is an expected alarm.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: When directed, defeat Degraded Grid Protection on Bus E-1 RFI EPSL007, and report back as AO that Steps 8.1.1.2.aa.1 has been completed</p> <p>When directed, defeat Degraded Grid Protection on Bus E-2 RFI EPSL008, and report back as AO that Steps 8.1.1.2.aa.3 has been completed</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>NOTE: Several starts / stops of the Bearing Oil Lift Pump may be required to prime the pump in a Motor where the Upper Reservoir has been drained and refilled.</p>	

PERFORMANCE INFORMATION

<p><u>STEP 3:</u> START the BRG LIFT PUMP AND CHECK the LIFT PRESSURE light ILLUMINATES. (Step 8.1.1.2.bb).</p> <p><u>STANDARD:</u> The operator reads the Note, and proceeds.</p> <p>The operator places the Bearing Lift Pump “B” Control Switch in the START position, and observes the Red status light is LIT and the Green status light is OFF.</p> <p>The operator observes that that the LIFT PRESSURE status light is LIT.</p> <p>EXAMINER’S CUE: If the operator addresses the CRS/SM about AOP-018 because of APP-001-E2, as the SM indicate that the performance of the procedure can be deferred.</p> <p>EXAMINER’S NOTE: APP-001-E2, RCP #1 SEAL LEAKOFF LO FLOW, alarms when the Bearing Oil Lift Pump is started. This is because the pump start causes the “B” RCP shaft to be lifted affecting the #1 Seal on the “B” RCP, which will affect the #1 Seal Leakoff flows on the other RCPs.</p> <p>The operator may address the APP, and may address AOP-018, Reactor Coolant Pump Abnormal Conditions. If so, a NOTE on the Entry Conditions to AOP-018 states that “IF RCP#1 Seal Leakoff flow is below 1 gpm due to plant conditions known to affect leakoff flow, the SM may defer procedure entry provided the #1 Seal Leakoff flow remains above 0.8 gpm.”</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 4:</u> IF RCP Oil Reservoir level annunciator is NOT EXTINGUISHED, THEN REFER to the appropriate Annunciator Procedure. (Step 8.1.1.2.cc).</p> <p><u>STANDARD:</u> The operator observes that APP-001-E8, RCP B OIL RESERV HI/LO LVL, is EXTINGUISHED.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u> NOTIFY RC that RCP's are to be started AND to monitor for changing radiological conditions. (Step 8.1.1.2.dd).</p> <p><u>STANDARD:</u> The operator contacts RC and makes notification.</p> <p>EXAMINER'S CUE: As RC Supervisor, Acknowledge</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>CAUTION: Only one Reactor Coolant Pump is to be started at a time.</p>	

PERFORMANCE INFORMATION

<p><u>STEP 6:</u> WHEN the Brg Lift Pump has operated for a minimum of 2 minutes, THEN START the Reactor Coolant Pump. (Step 8.1.1.2.ee).</p> <p><u>STANDARD:</u> The operator reads the Caution, and proceeds.</p> <p>The operator will make a plant announcement prior to starting the RCP.</p> <p>After 2 minutes with the Bearing Oil Lift Pump running, the operator places the B RCP Control Switch to the START position, and observes the Red status light is LIT and the Green status light is OFF.</p> <p>The operator will observe FI-424 at 118%.</p> <p>The operator will observe FI-425 at 118%.</p> <p>The operator will observe FI-426 at 117%.</p> <p>The operator will observe "B" RCP #1 Seal Leakoff on FR-154B to be 1.24 gpm.</p> <p>The operator will observe RCS pressure on PR-444 to be ≈360 psig.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 7:</u> WHEN a minimum of 50 seconds has elapsed since the Reactor Coolant Pump was started, THEN STOP the BRG LIFT PUMP. (Step 8.1.1.2.ff).</p> <p><u>STANDARD:</u> After a minimum of 50 seconds with the B RCP Running, the operator places the Bearing Oil Lift Pump Control Switch to the STOP position, and observes the Green status light is LIT and the Red status light is OFF. The operator observes that that the LIFT PRESSURE status light is OFF.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>CAUTION: Do NOT Restore the Degraded Grid Voltage Protection to NORMAL until the Amber indicating light is Extinguished.</p>	
<p>NOTE: The Degraded Grid Voltage keylock keys can NOT be removed from switches unless positioned to NORMAL.</p>	

PERFORMANCE INFORMATION

STEP 8:

IF E-1 Degraded Grid Voltage Protection is to be returned to NORMAL, THEN RESTORE as follows:

- Momentarily DEPRESS the amber E-1 DEGRADED GRID TRIP SIGNAL light cover AND CHECK the light ILLUMINATES.
- CHECK the amber E-1 DEGRADED GRID TRIP SIGNAL light is EXTINGUISHED.
- PLACE E-1 DEGRADED GRID VOLTAGE key switch to NORMAL.
- REMOVE key.
- IF all three RCPs have been placed in service, THEN NOTIFY I&C to perform Attachment 10.3, E-1 Defeat Switch Contact Position Verification.
- ENSURE Relay 27 contacts are RESET by performing the following:
 - DEPRESS the TARGET RESET pushbutton for Relay 27/DVA-1 AND CHECK that the target flag indicates black.
 - DEPRESS the TARGET RESET pushbutton for Relay 27/DVB-1 AND CHECK that the target flag indicates black.
 - DEPRESS the TARGET RESET pushbutton for Relay 27/DVC-1 AND CHECK that the target flag indicates black.
- CHECK annunciator APP-010-F5, DEGRADED GRID E-1 PROT BYPD, is EXTINGUISHED.
(Step 8.1.1.2.gg.1-7).

CRITICAL STEP

___ SAT

___ UNSAT

STANDARD:

The operator reads the Caution and Note, and proceeds.

The operator contacts AO and directs performance of Step 8.1.1.2.gg.1-6.

The operator observes APP-010-F5, DEGRADED GRID E-1 PROT BYPD, is EXTINGUISHED.

EXAMINER'S CUE:

If the operator asks the CRS about leaving the Degraded Grid Voltage Protection in effect until after the "C" RCP is started, direct the operator to continue with the procedure as written.

EXAMINER'S NOTE:

NONE

BOOTH OPERATOR CUE:

When directed, return Degraded Grid Protection on Bus E-1 to normal RFI EPSL007, and report back as AO that Steps 8.1.1.2.gg.1-6 have been completed

COMMENTS:

PERFORMANCE INFORMATION

<p><u>STEP 9:</u> IF an Action Statement has been entered due to bypassing Degraded Grid Protection, THEN NOTIFY the CRS/SM of exiting the Action Statement AND RECORD time. (Step 8.1.1.2.hh).</p> <p><u>STANDARD:</u> The operator records the time in the block provided.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 10:</u> IF E-2 Degraded Grid Voltage Protection is to be returned to NORMAL, THEN RESTORE as follows:</p> <ul style="list-style-type: none"> • Momentarily DEPRESS the amber E-2 DEGRADED GRID TRIP SIGNAL light cover AND CHECK the light ILLUMINATES. • CHECK the amber E-2 DEGRADED GRID TRIP SIGNAL light is EXTINGUISHED. • PLACE E-2 DEGRADED GRID VOLTAGE key switch to NORMAL. • REMOVE key. • IF all three RCPs have been placed in service, THEN NOTIFY I&C to perform Attachment 10.4, E-2 Defeat Switch Contact Position Verification. • ENSURE relay 27 contacts are RESET by performing the following: <ul style="list-style-type: none"> ○ DEPRESS the TARGET RESET pushbutton for relay 27/DVA-2 AND CHECK that the target flag indicates black. ○ DEPRESS the TARGET RESET pushbutton for relay 27/DVB-2 AND CHECK that the target flag indicates black. ○ DEPRESS the TARGET RESET pushbutton for relay 27/DVC-2 AND CHECK that the target flag indicates black. • CHECK annunciator APP-010-F6, DEGRADED GRID E-2 PROT BYPD, is EXTINGUISHED. (Step 8.1.1.2.ii). <p><u>STANDARD:</u> The operator contacts AO and directs performance of Step 8.1.1.2.ii.1-6.</p> <p>The operator observes APP-010-F6, DEGRADED GRID E-2 PROT BYPD, is EXTINGUISHED.</p> <p>EXAMINER'S CUE: If the operator asks the CRS about leaving the Degraded Grid Voltage Protection in effect until after the "C" RCP is started, direct the operator to continue with the procedure as written.</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: When directed, return Degraded Grid Protection on Bus E-2 to normal RFI EPSL008, and report back as AO that Steps 8.1.1.2.ii.1-6 have been completed</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 11:</u> IF an Action Statement has been entered due to bypassing Degraded Grid Protection, THEN NOTIFY the CRS/SM of exiting the Action Statement AND RECORD time. (Step 8.1.1.2.jj).</p> <p><u>STANDARD:</u> The operator records the time in the block provided.</p> <p>The operator informs the CRS that the LCO 3.3.5 Action Statement may be able to be exited.</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p>BOOTH OPERATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
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Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2016 Systems - Control Room JPM H

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- A plant startup is in progress in accordance with GP-002, Cold Shutdown to Hot Sub-Critical at No-Load Tavg.
- The "A" RCP is running.
- It is intended to start the "B" RCP next.
- Section 8.1 of OP-101, Reactor Coolant System and Reactor Coolant Pump Startup and Operation, has been completed through Step 8.1.1.2.y in preparation for starting the Reactor Coolant Pump.
- It is intended to bypass the Degraded Grid Protection prior to the RCP start and return it to service after the RCP is started per OP-101, and an AO is standing by to assist in this process.

INITIATING CUE:

The CRS has directed you to start the B Reactor Coolant Pump by continuing with Step 8.1.1.2.z of OP-101.

In-Plant JPM I

Developed By: _____ **Date:** _____
Instructor/Developer

Concurred By: _____ **Date:** _____
Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____
Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Locally Establish AFW Flow from the SDAFW Pump and Control S/G Levels and PressuresJPM No.: 2016 Systems – In-Plant JPM I

K/A Reference: EPE 055 EA2.01 (3.4/3.7)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: X Actual Performance: Classroom Simulator Plant X **READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

- Initial Conditions:
- The Plant has experienced a loss of onsite and offsite power.
 - EOP-ECA-0.0, Loss of All AC Power, has been implemented.
 - Wide range levels in all three SGs are 55%.
 - Steam Generator pressures are 1075 psig
 - The SDAFW Pump has just been started.

Initiating Cue: The CRS has directed you to locally perform Attachment 4, Local Control Of S/G Level And Pressure, of EOP-ECA-0.0.

Task Standard: The operator will control AFW flow to the Steam Generators and align the Nitrogen System to the SG PORVs IAW Attachment 4 of EOP-ECA-0.0.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)

General References: EOP-ECA-0.0 (Loss of All AC Power), Rev 4

Job Performance Measure Worksheet

OMM-22 (Emergency Operating Procedures User's Guide), Rev 45

Handouts: Handout 1: Blank copy of Attachment 4 of EOP-ECA-0.0.

Time Critical Task: NO

Validation Time: 7 minutes

<u>Critical Step Justification</u>	
Step 1	This step is critical because throttling the SDAFW Pump Discharge Valves is necessary to control AFW flow to the Steam Generators IAW Attachment 4 of EOP-ECA-0.0.
Step 3	This step is critical because closing IA-297 is necessary to align the Nitrogen System to the SG PORVs IAW Attachment 4 of EOP-ECA-0.0.
Step 4	This step is critical because opening SDN-13 is necessary to align the Nitrogen System to the SG PORVs IAW Attachment 4 of EOP-ECA-0.0.
Step 5	This step is critical because closing SDN-29 is necessary to align the Nitrogen System to the SG PORVs IAW Attachment 4 of EOP-ECA-0.0.
Step 6	This step is critical because opening SDN-28 is necessary to align the Nitrogen System to the SG PORVs IAW Attachment 4 of EOP-ECA-0.0.
Step 7	This step is critical because opening IA-423 is necessary to align the Nitrogen System to the SG PORVs IAW Attachment 4 of EOP-ECA-0.0.

PERFORMANCE INFORMATION

(Critical Steps are identified as such in right-hand column)

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

START TIME: _____

NOTE

Flashlights AND ANY handtools needed are located with AOP/EOP/DSP Tool Kits.

The S/G Wide Range level indicators LI-607A-2, LI-607B-2, AND LI-607C-2 located in the Secondary Control Panel are powered from PP-50 AND should always be available. These channels are credited in the SBO Coping Analysis.

STEP 1:

Locally THROTTLE The Steam Driven AFW Pump Discharge Valve(s) At The Secondary Control Panel Area To Maintain S/G WR Levels Between 60% AND 67%.

- AFW-V2-14A - S/G A
- AFW-V2-14B - S/G B
- AFW-V2-14C - S/G C

(Step 1)

CRITICAL STEP

___ SAT

___ UNSAT

STANDARD:

The operator reads the Notes, and proceeds.

The operator depresses the AFW-V2-14A, 14B and 14C de-clutch lever and rotates handwheel counterclockwise to increase feedwater flow or clockwise to decrease feedwater flow.

AS-FOUND:

All three valves are CLOSED (Stems fully inserted)

EXAMINER'S CUE:

After locating and describing how the three valves are operated, indicate that each valve has been De-Clutched and the handwheel rotated as needed to adjust feedwater flow

When appropriate, indicate that each SG WR level is 64% and stable

EXAMINER'S NOTE:

The operator may request that a second operator observe SG WR levels while the remainder of the Attachment is completed

COMMENTS:

PERFORMANCE INFORMATION

<p><u>STEP 2:</u> OBSERVE NOTE Prior To Step 10 AND GO TO Step 10 (Step 2)</p> <p><u>STANDARD:</u> The operator proceeds to Step 10.</p> <p>AS-FOUND: NA</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>NOTE IA-297 is located at the southeast corner of the Pipe Jungle at an elevation between the feed AND steam lines.</p>	
<p><u>STEP 3:</u> CLOSE IA-297, HDR STOP TO PORV STATION & MSIVS (Step 10)</p> <p><u>STANDARD:</u> The operator reads the Note, and proceeds.</p> <p>The operator rotates the IA-297 handwheel in the clockwise direction.</p> <p>AS-FOUND: OPEN (Stem Fully Withdrawn)</p> <p>EXAMINER'S CUE: The IA-297 handwheel will no longer turn in the clockwise direction and the stem is inserted</p> <p>EXAMINER'S NOTE: Located at the SE corner of Pipe Jungle between the Feed & Steam lines elevation</p> <p>IA-297 is located in the overhead under a catwalk and the operator must climb an installed ladder, or proceed up the stairs to the top floor of the Turbine Building. However, the valve can be seen from below or above, and discussion of operation can take place from one of these two locations</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

NOTE: SDN-13 is located at the Steam Dump Nitrogen Accumulator.

STEP 4: OPEN SDN-13, NITROGEN BACK UP SUPPLY
(Step 11)

STANDARD: The operator reads the Note, and proceeds.

The operator rotates the SDN-13 handwheel in the counter-clockwise direction.

AS-FOUND: CLOSED (Stem Fully Inserted)

EXAMINER'S CUE: The SDN-13 handwheel will no longer turn in the clockwise direction and the stem is inserted.

EXAMINER'S NOTE: Located at the Steam Dump Nitrogen Accumulator

COMMENTS:

**CRITICAL
STEP**

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

NOTE: SDN-28 AND SDN-29 are located at the southeast corner of the Pipe Jungle on the Mezzanine Deck.

STEP 5: UNLOCK AND CLOSE SDN-29, STEAM LINE PORV NITROGEN B/U TO IA TELL-TALE DRAIN (Step 12)

CRITICAL STEP

___ SAT

STANDARD: The operator reads the Note, and proceeds.

The operator unlocks and rotates the SDN-29 handwheel in the clockwise direction.

___ UNSAT

AS-FOUND: Locked OPEN (Stem Fully Withdrawn)

EXAMINER'S CUE: The SDN-29 handwheel will no longer turn in the clockwise direction and the stem is inserted.

EXAMINER'S NOTE: Located at the SE Corner of the Pipe Jungle on the Mezzanine Deck

COMMENTS:

STEP 6: UNLOCK AND OPEN SDN-28, NITROGEN BACKUP TO STEAM LINE PORVS (Step 13)

CRITICAL STEP

___ SAT

STANDARD: The operator unlocks and rotates the SDN-28 handwheel in the counter-clockwise direction.

AS-FOUND: Locked CLOSED (Stem Fully Inserted)

EXAMINER'S CUE: The SDN-28 handwheel will no longer turn in the counter-clockwise direction and the stem is withdrawn.

EXAMINER'S NOTE: Located at the SE Corner of the Pipe Jungle on the Mezzanine Deck

COMMENTS:

___ UNSAT

PERFORMANCE INFORMATION

NOTE: IA-423 is located at the southeast corner of the Pipe Jungle on the Mezzanine Deck.

STEP 7: UNLOCK AND OPEN IA-423, NITROGEN TO STEAM LINE PORVS (Step 14)

STANDARD: The operator reads the Note, and proceeds.

The operator unlocks and rotates the IA-423 handwheel in the counter-clockwise direction.

AS-FOUND: Locked CLOSED (Stem Fully Inserted)

EXAMINER'S CUE: The IA-423 handwheel will no longer turn in the counter-clockwise direction and the stem is withdrawn.

EXAMINER'S NOTE: Located at the SE Corner of the Pipe Jungle on the Mezzanine Deck

COMMENTS:

**CRITICAL
STEP**

___ SAT

___ UNSAT

STEP 8: NOTIFY The Control Room Of The Following:

- S/G level is under control locally
- The S/G Steam Line PORVs have N2 supplied for motive air (Step 15/15.a and b)

STANDARD: The operator contacts the Control Room and makes the notifications.

AS-FOUND: NA

EXAMINER'S CUE: As the CRS, acknowledge

EXAMINER'S NOTE: NONE

COMMENTS:

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

NOTE: When MCC-5 is energized, the Control Room will feed S/G A AND S/G C.

STEP 9: WHEN Notified From The Control Room, THEN FEED S/G B To 67%
S/G Wide Range Level AND SECURE Feeding
(Step 16)

STANDARD: The operator reads the Note, and proceeds.

The operator recognizes that this is a Continuous Action Step, and
reports that the Attachment is complete.

AS-FOUND: NA

EXAMINER'S CUE: NONE

EXAMINER'S NOTE: NONE

COMMENTS:

___ SAT

___ UNSAT

Terminating Cue:

Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2016 Systems – In-Plant JPM I

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

- INITIAL CONDITIONS:
- The Plant has experienced a loss of onsite and offsite power.
 - EOP-ECA-0.0, Loss of All AC Power, has been implemented.
 - Wide range levels in all three SGs are 55%.
 - Steam Generator pressures are 1075 psig
 - The SDAFW Pump has just been started.

INITIATING CUE: The CRS has directed you to locally perform Attachment 4, Local Control Of S/G Level And Pressure, of EOP-ECA-0.0.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

In-Plant JPM J

Developed By: _____ **Date:** _____
Instructor/Developer

Concurred By: _____ **Date:** _____
Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____
Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Respond to a Loss of Instrument Air JPM No.: 2016 Systems – In-Plant JPM J

K/A Reference: 065 AA1.04 (3.5.3.4)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: X Actual Performance:
Classroom Simulator Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- IA Header Pressure is 75 PSIG and lowering.
- AOP-017, Loss Of Instrument Air, has been entered.
- The Station Air Compressor is under clearance and disassembled
- The Station Air Receiver is depressurized and vented.

Initiating Cue:

- The CRS has directed you to perform AOP-017 Step 8.
- The Outside AO is standing by to assist as needed.

Task Standard: The operator will start IA Compressors “A” and “B” and align their discharge to supply air to the Instrument Air Header in accordance with Step 8 of AOP-017.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)

General References: AOP-017 (Loss of Instrument Air), Rev 43
OMM-22 (Emergency Operating Procedures User’s Guide), Rev 45

Job Performance Measure Worksheet

Handouts: Handout 1: Blank Copy of AOP-017.

Time Critical Task: NO

Validation Time: 14 minutes

<u>Critical Step Justification</u>	
Step 6	This step is critical because placing the IA Compressor A & B Control Switches in MANUAL is necessary to start IA Compressors "A" and "B" in accordance with Step 8 of AOP-017.
Step 8	This step is critical because rotating the IA-3665 handwheel in the counter-clockwise direction is necessary to align the IA Compressors "A" and "B" discharge to supply air to the Instrument Air Header in accordance with Step 8 of AOP-017.

(Critical Steps are identified as such in right-hand column)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

START TIME: _____

NOTE

IA-3821 is located on IA Dryer D.

Operator Aid 97-OP-35 to supply Station Air to Instrument Air is located in the Aux Bldg hallway on the Station Air Receiver.

STEP 1:

DISPATCH Operator(s) To Perform The Following:
CHECK Station Air Compressor Available For Service:
SA-1, STATION AIR TO RECEIVER - OPEN
AND
Station Air Compressor Function Switch - ON
(Step 8/8.a)

___ SAT

___ UNSAT

STANDARD:

The operator reads the Notes, and proceeds.

The operator recognizes that SA-1 is OOS and proceeds to the RNO.

AS FOUND:

SA-1 Red Tagged CLOSED, SAC Function Switch is Red tagged OFF (Cue as needed)

EXAMINER'S CUE:

NONE

EXAMINER'S NOTE:

NONE

COMMENTS:

PERFORMANCE INFORMATION

<p><u>STEP 2:</u> OPEN SA-1 AND PLACE the Station Air Compressor Function switch to ON. IF the Station Air Compressor is still NOT available for service, THEN GO TO Step 8.d. (Step 8.a RNO)</p> <p><u>STANDARD:</u> The operator recognizes that SA-1 cannot be opened nor can the SAC Function Switch be placed to ON, and proceeds to Step 8.d.</p> <p>AS FOUND: SA-1 Red Tagged CLOSED, SAC Function Switch is Red tagged OFF (Cue as needed)</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u> CHECK IA-18, AIR DRYER "A" & "B" BYPASS - OPEN (Step 8.d)</p> <p><u>STANDARD:</u> The operator observes IA-18, and (After Cue) proceeds to the Step 8.d RNO.</p> <p>AS FOUND: IA-18 stem is fully inserted (Cue as needed)</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 4:</u> OPEN IA-18, AIR DRYER "A" & "B" BYPASS. (Step 8.d RNO)</p> <p><u>STANDARD:</u> The operator rotates the IA-18 handwheel in the counter-clockwise direction.</p> <p>AS FOUND: IA-18 stem is fully inserted (Cue as needed)</p> <p>EXAMINER'S CUE: After locating and describing how the valve would be opened, indicate that the stem is fully withdrawn.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u> CHECK the following Compressors - RUNNING</p> <ul style="list-style-type: none"> • INST AIR COMP A • INST AIR COMP B <p>(Step 8.e)</p> <p><u>STANDARD:</u> The operator observes the IA Compressor A Control Switch.</p> <p>The operator observes the IA Compressor B Control Switch.</p> <p>AS FOUND: Both IA Compressors are stopped, with their local control switches in AUTO (Cue as needed)</p> <p>EXAMINER'S CUE: NONE</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 6:</u> START the following compressors:</p> <ul style="list-style-type: none"> • INST AIR COMP A • INST AIR COMP B <p>(Step 8.e RNO)</p> <p><u>STANDARD:</u> The operator places the IA Compressor A Control Switch in MANUAL.</p> <p> The operator places the IA Compressor B Control Switch in MANUAL.</p> <p>AS FOUND: Both IA Compressors are stopped, with their local control switches in AUTO (Cue as needed)</p> <p>EXAMINER'S CUE: After the IA Compressor Control Switches are placed in MANUAL indicate that the motor starts and the compressor is running</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 7:</u> CHECK FCV-1740, AIR DRYER HIGH DP FLOW CONTROL valve - OPEN (Step 8.f)</p> <p><u>STANDARD:</u> The operator observes FCV-1740.</p> <p>AS FOUND: CLOSED (Cue as needed)</p> <p>EXAMINER'S CUE: After locating and describing how the valve would be verified opened indicate the position indicator is down indicating closed.</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

<p><u>STEP 8:</u> OPEN IA-3665, AIR DRYER "A" & "B" BYPASS. (Step 8.f RNO)</p> <p><u>STANDARD:</u> The operator rotates the IA-3665 handwheel in the counter-clockwise direction.</p> <p>AS FOUND: CLOSED (Cue as needed)</p> <p>EXAMINER'S CUE: After locating and describing how the valve would be opened indicate the valve has been rotated fully counter-clockwise (stem fully withdrawn)</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 9:</u> OPEN IA-3821, INSTRUMENT AIR DRYER "D" BYPASS (Step 8.g)</p> <p><u>STANDARD:</u> The operator contacts the Outside AO and directs that IA-3821 be OPENED.</p> <p>AS FOUND: NA</p> <p>EXAMINER'S CUE: As the Outside AO, indicate that IA-3821 is OPEN.</p> <p>EXAMINER'S NOTE: IA-3821 is located on the "D" IA dryer.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

Terminating Cue:

Evaluation on this JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2016 Systems – In-Plant JPM J

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- IA Header Pressure is 75 PSIG and lowering.
- AOP-017, Loss Of Instrument Air, has been entered.
- The Station Air Compressor is under clearance and disassembled
- The Station Air Receiver is depressurized and vented.

INITIATING CUE:

- The CRS has directed you to perform AOP-017 Step 8.
- The Outside AO is standing by to assist as needed.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.

In-Plant JPM K

Developed By: _____ **Date:** _____
Instructor/Developer

Concurred By: _____ **Date:** _____
Line Superintendent/Supervisor/SRO

Approved By: _____ **Date:** _____
Superintendent/Supervisor Training

Job Performance Measure Worksheet

Facility: Robinson

Task No.:

Task Title: Loss of North SW Header in the
Auxiliary BuildingJPM No.: 2016 Systems – In-
Plant JPM K

K/A Reference: APE 062 AA2.01 (2.9/3.5)

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:Simulated Performance: X Actual Performance: Classroom Simulator Plant X **READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

Initial Conditions:

- The plant is at 100% power.
- The North SW header has ruptured inside the Auxiliary Building.
- The Control Room has implemented AOP-022 (Loss of Service Water) for a leak in the North header.
- The leak is located upstream of SW-503, SW Pump Supply to IVSW Tank, right next to the valve.

Initiating Cue: The CRS has directed you to perform the local subsequent actions IAW Attachment 6 of AOP-022.

Task Standard: The operator will isolate the intact SW header from the ruptured header, isolate the leak, and align cooling water to critical loads IAW Attachment 6 of AOP-022.

Required Materials: PPE (Hardhat, Safety Glasses, Hearing Protection, Safety Shoes etc.)
Laser pointer or flashlight

General References: AOP-022 (Loss of Service Water), Rev 35
2016 Systems – In-Plant JPM K

NUREG 1021, Revision 10

Job Performance Measure Worksheet

OMM-22 (Emergency Operating Procedures User's Guide), Rev 45
Plant Drawing G-190199 (Service & Cooling Water Flow Diagram) Rev 72

Figure 9.2.1-1, Flow Diagram Service and Cooling Water, Rev 26

Handouts: Handout 1: Blank Copy of Attachment 6 of AOP-022.
Handout 2: Figure 9.2.1-1, Flow Diagram Service and Cooling Water.

Time Critical Task: NO

Validation Time: 14 minutes

<u>Critical Step Justification</u>	
Step 1	This step is critical because closing either SW-18 or SW-19 is necessary to isolate the ruptured header from intact header.
Step 2	This step is critical because closing SW-740 and SW-102 is necessary to isolate the ruptured header from intact header.
Step 4	This step is critical because placing Instrument Air Compressor "B" in OFF is necessary to prevent damage to the compressor.
Step 7	This step is critical because cross-connecting the Booster Pump Suction is necessary to isolate the leak and align cooling water to critical loads (SW-25 must be closed to prevent reinitiating the leak, SW-26 and SW-27 must be opened to supply cooling water to vital equipment, SW-503 must be closed to prevent reinitiating the leak and SW-200A must be opened to provide emergency make up to the IVSW Tank).
Step 9	This step is critical because Closing SW-53 and Opening SW-83 is necessary to align cooling water to critical loads (EDGs).

PERFORMANCE INFORMATION

(Critical Steps are identified as such in right-hand column)

Provide Operator with Initial Conditions/Cue (Last Page of this JPM), and Handout 1.

START TIME: _____

CAUTION

Electrically rated boots and gloves must be worn in the Auxiliary Building where flooding is in progress.

NOTE

Dielectric rubber boots and low voltage electrical gloves are available in the AOP/DSP/EOP Equipment storage Locker inside the Auxiliary Building.

STEP 1:

Close One Of The Following Valves In The Auxiliary Building Hallway :

- SW-18, North & South Supply HDR X-Conn (Chain Operated)
- OR
- SW-19, North & South Supply HDR X-Conn (Chain Operated) (Step 1)

STANDARD:

The operator pulls either the SW-18 or SW-19 chain operator to rotate valve handwheel in the clockwise direction, and observes the area for water.

AS FOUND:

Both Valves Are Open

EXAMINER'S CUE:

The operator reads the Caution and Note, and proceeds.

The operator may enter the AO Office and view the Service Water P&ID. If so, **Provide a copy of Handout 2.**

After locating and describing how either valve would be closed then indicate the selected valve has been rotated full clockwise and the pointer indicates "Closed".

IF asked if any water is observed on the ground in the AUX BLDG Hallway near the SW Booster Pumps, say YES.

EXAMINER'S NOTE:

The valve handwheels face opposite directions. Ensure operator turns the selected handwheel via the chain in the proper direction.

COMMENTS:

CRITICAL STEP

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

NOTE

SW-102 is located overhead East of CCW Pump B on top of horizontal header supported by adjustable pipe support.

STEP 2:

Close The Following Valves In The CCW Pump Room:

- SW-740, CCW Heat Exchanger "B" Return
- SW-102, HVH-7B Supply (Step 2)

STANDARD:

The operator reads the Note, and proceeds.

The operator rotates the SW-740 and SW-102 handwheels in the clockwise direction.

AS FOUND:

Both Valves Open (SW-740 Pointer Indicates "POS 1" And SW-102 Stem Is Fully Withdrawn).

EXAMINER'S CUE:

After locating and describing how both valves would be closed, indicate the valves have been rotated full clockwise, the SW-740 pointer indicates "Closed" and the SW-102 stem is fully inserted.

EXAMINER'S NOTE:

SW-102 is located overhead east of CCW Pump "B" on top of horizontal header supported by adjustable pipe support.

SW-102 is located in the overhead will require a ladder to manipulate. A ladder is located on the south wall of the CCW Pump Room.

COMMENTS:**CRITICAL STEP**

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

<p><u>STEP 3:</u> Notify Control Room Personnel That Steps 1 And 2 of Attachment 6 Are Complete (Step 3)</p> <p><u>STANDARD:</u> The operator contacts the Control Room and reports Steps 1 and 2 of Attachment 6 are complete.</p> <p>AS FOUND: NONE</p> <p>EXAMINER'S CUE: When contacted, as CRS then acknowledge the report from the operator</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 4:</u> Place Instrument Air Compressor B Control Switch In The OFF Position (Step 4)</p> <p><u>STANDARD:</u> The operator places the Instrument Air Compressor "B" Control Switch in OFF position</p> <p>AS FOUND: IA Compressor B Control Switch is in AUTO</p> <p>EXAMINER'S CUE: After locating and describing how the "B" IA compressor would be placed in "OFF" indicate the Control Switch has been rotated to the middle position "OFF".</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>

PERFORMANCE INFORMATION

CAUTION

Subsequent actions to cross-connect cooling water to plant components should not be performed if the leak will be reinitiated.

NOTE

SW-53, North Supply HDR To "B" TRN Components In Aux Bldg, is located in Auxiliary Building hallway, midway between Instrument Air Dryers A and B, above third cable tray.

STEP 5: Check leak location - Downstream of SW-53.
(Step 5)

STANDARD: The operator reads the caution and Note, and proceeds.

The operator observes the area for water and determines (After Cue) leak is NOT Downstream of SW-53 and goes to step 5 RNO which goes to Step 9

AS FOUND: NONE

EXAMINER'S CUE: WHEN asked for leak location, indicate the leak is located upstream of SW-503, SW Pump Supply to IVSW Tank, right next to the valve.

EXAMINER'S NOTE: The operator may refer to P&ID for Service Water or Operator Aid 03-OP-02 from AOP-022 book at IAO desk

COMMENTS:

___ SAT

___ UNSAT

PERFORMANCE INFORMATION

STEP 6: Check Leak Location – Upstream of SW-25, North HDR Supply To SW Booster Pump (Step 9)

STANDARD: The operator determines the leak is upstream of SW-25.

AS FOUND: NONE

EXAMINER'S CUE: Leak location was provided in previous step.

EXAMINER'S NOTE: NONE

COMMENTS:

___ SAT

___ UNSAT

NOTE

- SW Booster Pump B may be operated as required after the suction path is established from the South Service Water Header.
- Closing SW-503, SW Pump Supply To IVSW Tank, also isolates SW to the Penetration Coolers.

PERFORMANCE INFORMATION

<p><u>STEP 7:</u> Cross-Connect SW Booster Pump Suction Supply As Follows:</p> <ul style="list-style-type: none"> a. Close SW-25, North HDR Supply To SW Booster Pumps b. Open SW-26, SW Booster Pump Suction Cross-Connect c. Open SW-27, SW Booster Pump Suction Cross-Connect d. Close SW-503, SW Pump Supply To IVSW Tank e. Open SW-200A, SWBP "A" TO IVSW Tank Supply (Step 10) <p><u>STANDARD:</u> The operator reads the Notes, and proceeds.</p> <p>The operator rotates the T-handle locking device counter-clockwise on SW-25, and rotates the handwheel clockwise.</p> <p>The operator rotates the T-handle locking device counter-clockwise on SW-26, and rotates the handwheel counter-clockwise.</p> <p>The operator rotates the T-handle locking device counter-clockwise on SW-27, and rotates the handwheel counter-clockwise.</p> <p>The operator rotates the SW-503 handwheel clockwise.</p> <p>The operator rotates the SW-200A handwheel counter-clockwise.</p> <p><u>AS FOUND:</u> SW-25 & SW-503, OPEN SW-26, SW-27 & SW-200A, CLOSED</p> <p><u>EXAMINER'S CUE:</u> After locating and describing how each valve would be operated then indicate the selected valve has been rotated full counter-clockwise and the stem is fully withdrawn for the "OPEN" valves and rotated full clockwise with the stem fully inserted for the "CLOSED" valves</p> <p>SW-26 and 200A is located above the A SW Booster Pump.</p> <p>SW-503 is located above the vent duct above the B SW Booster Pump, and requires a ladder.</p> <p><u>EXAMINER'S NOTE:</u> NONE</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

STEP 8: Notify Control Room Personnel That Step 10 Is Complete And SW Has Been Cross-Connected To Supply SW Booster Pump B (Step 11)

STANDARD: The operator contacts the Control Room and reports SW has been cross-connected to supply SW Booster Pump "B".

AS FOUND: NONE

EXAMINER'S CUE: When contacted, as CRS acknowledge the report from the operator

EXAMINER'S NOTE: NONE

COMMENTS:

___ SAT

___ UNSAT

NOTE

- SW-83, Diesel Supply Cross-Connect, is located at the North end of Emergency Diesel Generator A.
- Cross-connecting Service Water to the Emergency Diesel Generators will also cross-connect Service Water to HVH-6B, HVH-8B, and Instrument Air Compressor B.
- A ladder is required for access to SW-53, North Supply HDR To "B" TRN Components In Aux BLDG.

PERFORMANCE INFORMATION

<p><u>STEP 9:</u> Cross-Connect Service Water Supply To EDGs AS Follows:</p> <ul style="list-style-type: none"> a. Close SW-53 b. Open SW-83 (Step 12) <p><u>STANDARD:</u> The operator reads the Notes, and proceeds.</p> <p>The operator rotates the SW-53 handwheel in the clockwise direction.</p> <p>The operator rotates the SW-83 handwheel in the counter-clockwise direction.</p> <p>AS FOUND: SW-53 is OPEN, SW-83 is CLOSED</p> <p>EXAMINER'S CUE: After locating and describing how each valve would be operated indicate that the SW-53 handwheel has been rotated full clockwise and the stem is fully inserted, and that the SW-83 handwheel has been rotated full counter-clockwise with the stem fully withdrawn.</p> <p>EXAMINER'S NOTE: SW-53 is located in the overhead will require a ladder to manipulate. A ladder is located on the south wall of the CCW Pump Room.</p> <p>There is a label identifying the location of SW-53 on the vent duct above the walkway between the IA Dryers A and B.</p> <p>SW-83 is located in the A EDG Vault Room. This room requires Control Room/WCCS permission to enter the room. The examiner will either need to get permission to enter, or open the door and observe the valve without entering the room (The valve can be seen from the open doorway).</p> <p><u>COMMENTS:</u></p>	<p><u>CRITICAL STEP</u></p> <p>___ SAT</p> <p>___ UNSAT</p>
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PERFORMANCE INFORMATION

<p><u>STEP 10:</u> Notify Control Room Personnel That SW Has Been Cross-Connected To Supply The Following Equipment:</p> <ul style="list-style-type: none"> • EDG B • Instrument Air Compressor B • HVH-6B • HVH-8B (Step 13) <p><u>STANDARD:</u> The operator contacts the Control Room and reports that SW has been cross-connected to supply the above equipment</p> <p>AS FOUND: NONE</p> <p>EXAMINER'S CUE: When contacted, as CRS acknowledge the report from the operator</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 11:</u> Notify Control Room Personnel That Attachment 6 Is Complete (Step 14)</p> <p><u>STANDARD:</u> The operator contacts the control room and reports that Attachment 6 is complete</p> <p>AS FOUND: NONE</p> <p>EXAMINER'S CUE: When contacted, as CRS acknowledge that Attachment 6 is complete</p> <p>EXAMINER'S NOTE: NONE</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2016 Systems – In-Plant JPM K

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

JPM CUE SHEET

INITIAL CONDITIONS:

- The plant is at 100% power.
- The North SW header has ruptured inside the Auxiliary Building.
- The Control Room has implemented AOP-022 (Loss of Service Water) for a leak in the North header.
- The leak is located upstream of SW-503, SW Pump Supply to IVSW Tank, right next to the valve.

INITIATING CUE:

The CRS has directed you to perform the local subsequent actions IAW Attachment 6 of AOP-022.

NOTE: No plant equipment should be operated during the performance of this JPM. All actions must be SIMULATED.